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ABSTRACT

Simulated Occupational Choice (SOC) was developed to measure competencies in career decision-making. SOC is a structured, individually-administered simulation exercise designed to elicit career decision-making behaviors and enable those behaviors to be observed, recorded, and scored in meaningful ways, particularly for diagnosis. It was administered during three field tests to small samples of 9th- and 12th-grade students and later to small numbers of college students. It has undergone a series of revisions during its development and is still to be considered an experimental instrument which may (1) be administered by counselors to diagnose a student's competencies and deficiencies in seeking, interpreting, and using information relevant to career decision-making, (2) be used with small samples of students to evaluate a guidance program or treatment, (3) serve as a criterion for validating group-administered tests of career decision-making competencies, and (4) provide the nucleus for a group course in career decision-making. (Author)

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PR-76-4

SIMULATED OCCUPATIONAL CHOICE: A MEASURE OF COMPETENCIES IN CAREER DECISION-MAKING

by

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Lila Norris
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Amy Weber

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
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Educational Testing Service
Princeton, New Jersey

February 1976

FINAL REPORT

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National Institute of Education Project No. NE-G-00-3-0216

Principal Investigators: M. Katz, L. Norris

Educational Testing Service
Princeton, New Jersey

February 1976

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Lila Norris and Martin R. Katz
Principal Investigators

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CHAPTER I

THE DEVELOPMENT OF SOC

This developmental research began with a perceived need, an idea for meeting that need, and a procedure for translating the idea into practice. The need was for a good measure of competencies in career decision-making (hereafter CDM), particularly a measure that would provide diagnostic information about such essential processes as acquiring and using information. The idea was to develop a structured and standardized simulation of occupational choice that would elicit important CDM behaviors and enable those behaviors to be observed, recorded, and scored in meaningful ways. The translation of this idea into a useful product required initial development followed by iterative cycles of tryout and revision to test and improve the procedures, materials, and scoring system.

Thus, several successive forms of Simulated Occupational Choice (SOC) were constructed and tried out. Although complex behaviors were being elicited, dictates of practicality required (1) simplification of procedures and materials so that the instrument could be given by people with very little training, (2) reduction of administration time to no more than 45 minutes so that a substantial number of students could be tested, and (3) ease of recording so that observations could be readily entered and later converted into scores that directly describe behavior in diagnostic terms.

It was originally hoped that we could provide evidence of validity of scores in the two-year term of the project. We never reached this point, because each tryout of materials and procedures gave us new ideas for improving--or at least changing--the instrument. Only at the end of the period were we satisfied that SOC had reached a state of readiness for validation.

The report, then, deals mainly with the development of SOC through its successive transformations. Instead of proceeding directly to a description of the current version of SOC, as if it were what we had had in mind from the very beginning, we have eschewed the advantages of hindsight and have tried to describe our trials and errors and corrections and further errors along the way to our present vantage point.

From this vantage point, it is now clear that some of the things we did were stupid. How could we have expected them to be anything but losers? In mitigation, we can say only that wisdom comes from good judgment; good judgment comes from experience; and experience comes from bad judgment. Thus, in tracing in some detail this developmental effort through its vicissitudes, we record our own growth as competent decision-makers. For, as Shaw said, "Men are wise in proportion not to their experience, but to their capacity for experience." If SOC is now a promising product, it is because we have been able to learn from experience--that is, to identify a problem, to invent and construct solutions, to see information, to select what is relevant, to interpret it and use it in our judgments, and then to reconstruct our solutions.

But this record of the researchers' growth in wisdom during the development of SOC, however irresistible it may be to the reader, still leaves a gap: evidence bearing on validity. Abhorring this gap, we collected and analyzed data generated by administration of the very latest form of SOC to another small sample of students enrolled in a four-year college. These students included an experimental treatment group that had used the computer-based System of Interactive Guidance and Information (SIGI) and a control group that was scheduled for later use of SIGI. This study, although undertaken after the expiration of the grant period, is described in Chapter V. Although group scores are compared, our major focus throughout this developmental research and formative evaluation has remained consistently on interpretation of individual scores for diagnosis of competencies and deficiencies in CDM.

Rationale for SOC

Current emphasis on career development and guidance brings renewed concern with evaluation and particular focus on the criteria by which the effects of such programs can be measured. Touching on this problem in the Encyclopedia of Educational Research, the present writer pointed out,

> "Triennial reviewers have consistently decried the scarcity and poor quality of evaluation studies (Jones, 1939; Patterson, 1963). The criterion problem has been particularly slippery. Like a fussy fisherman who can't eat what he can catch and can't catch what he could eat, the evaluator has generally found that angling for data on long-range outcomes overtaxes his patience and resources, while the short-term data that are more easily netted often lack nourishment or flavor and may as well be thrown back." [Katz, 1969a]

The article goes on to review criterion measures used over the last thirty years, most of which emphasize external judgments of the wisdom of choices made. Many of these criteria were appropriate for a trait-and-factor theory of guidance, but recent evaluators--recognizing the impact of contemporary models of career development and decision-making--have sought other fish to fry.

As Cronbach and Gleser [1957] suggest,

> "..the decision for each [student] must be evaluated on a different scale of values. Since the student will make a particular

> choice only once, it is manifestly impossible to seek a strategy which is superior on the average, for the average has no meaningful definition. A particular decision must be evaluated on the basis of the expected outcome and its value for this individual."

They conclude that it is impossible for anyone save the decision-maker himself to determine the "correct" course of action:

> "To correct...[the individual's]...misconceptions regarding the probable outcomes of various decisions...is just one side of the decision process. An equally important determiner of the utility of the decision is whether the...[individual]...brings to bear a consistent and fully acceptable value system." [ibid.]

How does one devise measures of these highly individual concepts, such as awareness and consistency of values in making a decision? The present writer grappled with this problem in the evaluation of the effects of a work-text in career decision-making for junior high school students [Katz, 1957]. An objective test was developed, purporting to measure students' mastery of concepts involved in self-appraisal, in getting and interpreting information, and in the logic of career decision-making [Shimberg and Katz, 1962]. Although experimental schools scored very significantly higher on this test than control schools, the author must confess dissatisfaction with the necessary emphasis in such a test mainly on students' ability to express their understanding of principles and concepts--albeit sometimes applied to hypothetical cases--rather than on their application and use of these understandings and skills in their own decision-making.

As part of the same evaluation study, Gribbons was commissioned to develop and use an interview schedule that attempted to measure the students' ability to relate the concepts and principles they had learned to their own decisions and plans [Gribbons, 1960].

Scores on this instrument (Readiness for Vocational Planning) showed that experimental students experienced highly significant increases in awareness of their own values, interests, and abilities, made greater use of these concepts in decisions about their curricula and occupations, and evidenced greater willingness to assume responsibility for their career decisions. In short, these findings were interpreted as evidence that the experimental group had gained in the construct which Super and Overstreet [1960] defined as "vocational maturity."

Readiness for Vocational Planning has been used in an extensive program of research by Gribbons and Lohnes [1968]. Some of these later results have been anomalous, raising serious questions about the measure as an index of "vocational maturity." For example, eighth-grade scores have been more accurate than tenth-grade scores as predictors of later (post-secondary school) "success of vocational adjustment."

Other researchers have also developed instruments that purport to measure "vocational maturity." One of the best known and most carefully constructed is the Vocational Development Inventory [Crites, 1971]. The items in this instrument (designed for use at elementary and secondary school levels) are keyed according to the responses of twelfth-grade students. Extensive developmental research has been carried out--for example, on elimination of variance attributable to acquiescent response set. Yet the instrument has been criticized on just these grounds: Vocational maturity, as defined by the VDI, means saying no. And a group of counselor educators and vocational psychologists disagreed with the keys for a number of items.

A Career Questionnaire more recently constructed by Super and others [1970, 1971] also aims to measure "vocational maturity." The three factors most closely identified were named Planning Orientation, Resources for Exploration, and Decision-Making and Information--rubrics similar to those derived from the Career Pattern Study [Super and Overstreet, 1960]. Several sets of items ask students to report "how much thinking" they have done on various topics related to career choices, how much "time, thought, and effort they give to making choices," how much they feel they know about various aspects of the occupation they like best, and what sources of information they might use, or have used; another set taps occupational information: for example, labor market trends, amount of education required for entry into various occupations, equipment used in specified occupations, and so on; still another set presents some brief bits of information about a hypothetical student and asks what interpretation should be made or what action the hypothetical student should take.

Westbrook [1970] had been developing a Vocational Maturity test which originally included a number of items from the test that Katz developed in the 1950's, mentioned earlier [Shimberg & Katz, 1962]. The items in Westbrook's test tapped various kinds of information, Course and Curriculum Selection, Planning, Goal Selection, etc. A more recent version appears to concentrate almost exclusively on occupational information: duties, work conditions, entry requirements, etc. of various occupations.

Crites [1973] has also attempted to develop "competency" tests. His battery includes 20 items for each of the following tasks: select an appraisal of an individual from a description of characteristics; match an occupational title to a job description; fit a job to a description of some individual characteristics; identify an appropriate sequence of steps to enter a given occupation; and recognize a solution to a given problem in school or in choosing an occupation.

All of these efforts to get at the construct, "vocational maturity," are good tries. This is not to damn them with faint praise. But it is to suggest that they are still some distance removed from a direct measure of competence in career decision-making (CDM). They test occupational information and understanding of concepts or provide self-reports of attitudes, but they do not directly observe the student's behavior in applying his* concepts and attitudes to the actual process of making decisions. At best, they may be "indicators" of the construct of "vocational maturity," but they are hardly "definers" of it, to use the distinction made by Cronbach [1969].

Certainly, they seem remote from the complex competencies that the individual student must master and use in his own career decision-making. For example, matching an occupation title to a job description might measure reading comprehension and general information, but hardly seems specifically relevant for CDM. Selecting a job that fits a described set of individual characteristics in a multiple-choice format implies that there are pat universal answers to CDM--the old and discredited model of matching an individual to an occupation on the basis of a few traits. These are not work samples of CDM because they do not involve the individual student's own constructs; they do not engage him in CDM in his own identity. Yet the unique content of CDM, as distinct from the content in other kinds of educational knowledge and skills, resides primarily in the individual student's sense of his own identity. He must first know himself. Then, when he deals with data from other domains--for example, occupations and education--he seeks relevance to the personal domain in terms of what is salient to him. He feels no urge to concern himself with the total universe of occupational information, or some random sample of it. He wants to deal not with a random but a stratified sample--the strata to be defined uniquely for him, by himself. He seeks relevance before (to use a distinction formulated by Tiedeman, 1967) data can become information. In short, the domain of personal constructs and specifications must define the relevant slices through the universe of external domains.

It may be true that the more students know of the total universe of some domain, the more they are likely to know what is relevant. But that is only to say that cognitive competencies generally tend to be intercorrelated. If we are to use such indicators, we might as well use measures of reading comprehension or mathematical ability or general information. Such measures are not definers of competency in CDM, nor can they identify the unique variance in CDM.

To go a step further, one may raise questions about their validity as "indicators." For example, the many items getting at facts about particular occupations hardly seem appropriate for students who may have had no interest whatsoever in those occupations. Although some questions refer to occupational preferences expressed by the student (for instance, Super attempts to assess "Wisdom of the Occupational Preference" and "Consistency of Preference"), the title of an occupation is probably a poor indicator of what choosing an occupation means to an individual.

---

*To avoid awkwardness, this report follows the convention of using the masculine form of the third-person singular pronoun to refer to either sex.

As this writer has elaborated elsewhere [Katz, 1969b], the content of choice is a less defensible criterion than the process of choosing. A measure of process also turns out to be quite practical.

Through simulation, it is possible to standardize the array of career options and the universe of information available about each option. We can then focus on each student's behavior in seeking and using information to make his choice among the options. As the present writer has pointed out previously,

> "Decision-making at each stage may be regarded as a strategy for acquiring and processing information. If a decision is truly to be made, if it is not a foregone conclusion, it must involve some novel elements. The person confronted with the problem of decision-making either does not know what information he needs, does not have what information he wants, or cannot use what information he has. Thus, the pressure for making a decision creates a discrepancy between the individual's present state of knowledge (or wisdom) and the state that is being demanded of him." [Katz, 1963, p. 25]

It seems reasonable then, as the author suggested in a paper on "Criteria for Evaluation of Guidance," that

> "The role of guidance should be to reduce the discrepancy between a student's untutored readiness for rational behavior and some hypothetical ideal state of knowledge and wisdom. Thus, the appropriate criteria for a given program...might be: (1) Do students know what information they need? (2) Can they get the information they want? (3) Can they use the information they have?" [Katz, 1966, p. 176]

To know what information he needs, a student must know his own values. If we grant that students will vary in the weights they attach to any occupational value, we must allow for variation in the importance that any item of information will have for each student. Thus, a student should be free to seek the information that is most significant and salient to him at any stage in his career decision-making. The extent to which he recognizes what information is salient will be reflected by the extent to which he asks the "right questions"--the questions that will lead him to the important information.

To get the information he wants implies not just that he seeks information from an appropriate domain. He must also know how to frame the question so that appropriate connections can be made between his values and occupational information that might be accessible. For example, if a student values job security, he must be able to translate this value into questions about tenure, seniority provisions, occupational outlook projected over a period of years, vulnerability to economic conditions or to technological developments, and so on. He should also be able to recognize the categories in which specific items of information are most likely to reside.

Finally, to use the information that he receives means that the information makes a noticeable difference in moving toward a decision. A student must be able to integrate pieces of discrete information in some rational way to arrive at a decision. The impact of each item of information on the student's decision should be visibly consistent with the importance of the dimension to which it pertains and with the instrumentality of each option for providing appropriate rewards and satisfactions.

All of these considerations have gone into the construction of the instrument called Simulated Occupational Choice (SOC). Like simulations generally, SOC presents a standard set of exercises that are representative of real-life tasks, but purified and time-compressed, with much of the "noise" and messiness of real-life conditions removed or controlled. It is an individually administered procedure which may (1) serve as a criterion for validation of group-administered tests, (2) be used with small samples of students to evaluate a guidance program, (3) be administered by counselors to help diagnose an individual student's strengths and weaknesses in using and applying information, or (4) provide the nucleus for a group course in career decision-making.

Schedule of SOC Research

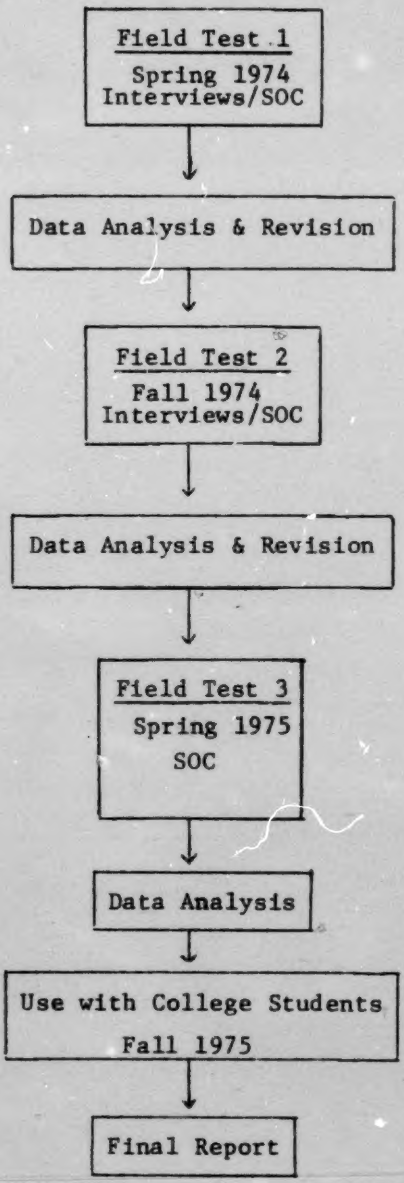
Simulated Occupational Choice (SOC) was a two-year project aimed at developing an instrument for measuring competency in career decision-making. As is often the case in developmental work, the instrument underwent numerous changes from the original design during the course of the project. Three separate field tests were conducted, one during the first year and two during the second, each with a different version of the instrument and with a different sample of secondary school students. Finally, an additional administration of SOC involved a small sample of college students. A sketch of the flow of research activities is given in Figure A.

This report describes each field test separately in chronological order. During the first year we traveled about as far as scheduled down the road we had mapped out. If things had gone the way we had hoped, by the end of that year we would have found ourselves well along in the development of a final version of SOC. But things did not go entirely well. The preliminary version of SOC proved to possess many useful and interesting features, but we were dissatisfied with the measures and decided that extensive revisions were required. (See Chapter II.)

These revisions were made during the second year of the project, and two additional field tests were conducted to try out modified versions of SOC. The results of these additional field tests are presented in Chapters III and IV. A final version, with relatively minor revisions, was then used with a small sample of college students, as reported in Chapter V.

FIGURE A

SCHEDULE OF SOC RESEARCH


Field Test 1
Spring 1974
Interviews/SOC
Data Analysis & Revision
Field Test 2
Fall 1974
Interviews/SOC
Data Analysis & Revision
Field Test 3
Spring 1975
SOC
Data Analysis
Use with College Students
Fall 1975
Final Report

CHAPTER II

FIELD TEST 1 (SPRING 1974)

General Design

SOC was administered in conjunction with an interview previously developed to assess CDM competencies and characteristics. Two separate hours of each student's time were needed to complete participation. Half the students played the SOC game during the first hour; half were interviewed first. A week usually elapsed between the first and second parts of the study. During the second hour, students who had played SOC first were interviewed, and vice versa. To avoid contamination, a student played the game with one researcher and was interviewed by another researcher.

Each student played SOC at least once. If time permitted, a second game (with three new occupations) was played using the same questions generated by the student in the first game. Ninth graders took from 20 to 50 minutes to play one SOC game, slightly longer than it took seniors to play one game (from 15 to 40 minutes). Consequently, fewer ninth graders played the game twice.

Description of Sample

Four area schools agreed to participate in the SOC Pilot Study. Two schools were four-year schools, from which both freshmen and seniors were drawn. One school was a junior high school, from which freshmen were drawn. The fourth school, from which seniors were drawn, was a senior high school in the same area as the junior high school.

Names of thirty ninth-graders and thirty twelfth-graders were taken at random from rosters at each school. Equal numbers of boys and girls were selected. Students whose names had been selected were interviewed individually. The project was explained and students were told what would be required of them. Those who agreed to participate were given a letter to their parents explaining the research, and a permission slip to be signed and returned. Of the 124 students initially contacted (see Table II-1), 85 agreed to participate. Of the 85 who agreed, 73 students completed all parts of the project.

The final sample consisted of 39 ninth-graders (18 boys and 21 girls) and 34 twelfth-graders (19 boys and 15 girls) from the four area schools.

TABLE II-1

DESCRIPTION OF SAMPLE, SPRING 1974

	Grade 9			Grade 12			Total Gr. 9 & Gr. 12		
	No. Contacted	No. Agreed	No. Completed	No. Contacted	No. Agreed	No. Completed	No. Contacted	No. Agreed	No. Completed
School A	17	7	7	19	12	9	36	19	16
School B-1				18	11	11	48	37	35
School B-2	30	26	24						
School C	20	11	8	20	18	14	40	29	22
Total	67	44	39	57	41	34	124	85	73

SOC Procedures, Spring 1974

The following is a description of the SOC game as it was played in the first field trial.

The student received the following instructions printed on a sheet of paper and was permitted approximately five minutes to respond:

> "In a few minutes you will play a game designed to measure how good a decision-maker you are. I will ask you to choose one of three occupations that suits you best. These are real occupations, but I will not tell you their names. To help make this choice, you will ask questions and receive answers about the three occupations.
>
> This is not a guessing game and you will only be allowed to ask a limited number of questions. You should ask only those questions that are important to help you decide which occupation is likely to suit you best.
>
> Spend the next few minutes jotting down questions you would like answered. Don't worry about the exact wording--what you write now will serve as notes for playing the game later.
>
> Use the space below to write your questions."

A brief description of the game was read to the student:

> "As you already know, the purpose of the game is to ask questions so that you can choose the one of the three occupations that suits you best. Each time you ask a question and get information, you will be asked to show how you feel about each occupation as an actual choice for yourself by moving markers along a scale."

The student went through a trial run in which he was asked to select one of three desserts. The purpose of the trial run was two-fold: (1) to show the student how to use the scales, and (2) to spot inconsistencies on the part of the student. For example, after the third question in the trial run, a student was asked which dessert he would select. It was expected that the student would select the dessert corresponding to the marker with the highest scale position. If this did not happen, the interviewer explained the inconsistency and gave the student the chance to rearrange his markers or restate his choice.

It was also expected that this trial run would reveal individual stylistic differences in use of the scale. Such differences in distance moved could provide baseline standards for calibrating distance moved in SOC.

The following directions were read aloud:

> "This is not an easy task so we are going to have a practice trial. For the practice trial let's consider the example of choosing a dessert. However, instead of having you ask questions, as you will later on, I have already made up three questions that people frequently ask about desserts. The questions are:
>
> 1. Do they have chocolate?
> 2. Are they hot or cold?
> 3. Do they have fruit?
>
> I'm going to answer these questions one at a time. Each time I answer a question I want you to use these scales and these markers to show how you feel about each of the three desserts. Before we start, let's identify the top and bottom of the scale. What's the best possible dessert you can think of? Okay, think of that as being at the top of the scale. Now, what's the worst possible dessert you can think of? Think of that as being at the bottom of the scale. Each time I answer a question, I want you to place the markers on these scales to show how appropriate you find each of the desserts as an actual choice for yourself. At the end you find out what they are."

Answers were presented and scale positions recorded.

> "Before I tell you what the desserts are, I want you to make a choice. Which of the three desserts do you choose? Now I want you to tell me how certain you are of your choice. In other words, I want you to estimate what the chances in 100 are that even if I told you what the three desserts were, dessert # (top one) would be the one you would select as your favorite. Think of it as a betting situation in which you have $100 to wager. Right now you have only a limited amount of information about the desserts. How much of that $100 would you bet that when I show you the desserts you will select dessert # (top one as your favorite one?) (Record.) That leaves _____ dollars. How much of that would you bet that you would select this dessert as your favorite? (Record.) That leaves ____ dollars for this last dessert."

Desserts were shown and student was asked if his bets seemed to reflect the certainty of his choice.

When it was clear that the student understood the task, he started to play the game. For each of his first five questions, the scale positions of the markers were recorded. After the fifth question, the student was asked to make a choice and to indicate how certain he was of that choice.

> "Now we'll go on to play the game. In playing the game you will move the markers and show how certain you are of your choice, much the same as you did for the desserts. Instead of desserts, however, the task will be to select the occupation that suits you best. Before we start, do you have any questions?
>
> Now ask me a question. Remember, this is not a guessing game. Only ask questions that will help you decide which occupation suits you best. All of these occupations are ones you've heard of and all require some training."

Up to five student questions were answered. Scale positions were recorded after each question.

> "Now, I want you to make a choice. I realize that you have only a limited amount of information about these three occupations, but choose one anyway. (Record choice.) Now I want you to indicate how certain you are of your choice, much in the same way you did in the dessert situation. How much of the $100 would you bet that even if you knew all there was to know about these occupations you would still select the one you did? (Record.) How much would you bet on this next occupation? (Record.) The remaining money (so that it sums to $100) we'll put on the last alternative."

If the student tried to assign more than $100 across the three alternatives, it was explained why he couldn't do this.

Next, the student was allowed to ask additional questions. Marker positions were recorded after each question. When the student was finished asking questions, certainty estimates were obtained.

> "Now I will answer any other questions you have. What else would you like to know?"

Remaining questions were answered. Movements were recorded one question at a time. Certainty estimates were obtained at end.

The student was then shown a list of the kinds of information available about these occupations. He could select the information he would need to see in order to make a final decision. Questions were recorded and answered. Marker positions were recorded after he saw each piece of information selected from the list. The student selected the occupation he believed suited him best. Certainty estimates were obtained after the final choice.

> "Now I'm going to show you the kinds of information that we have about the occupations. You can get to see whatever information you like. Remember, however, that you are being scored on how you ask for and use information, so ask only for information you consider important. Is there anything on this list that you would like to see?"

Questions were recorded. Student was given extra information, one question at a time. Ratings were recorded after each additional piece of information. Certainty estimates were obtained at the end.

The student was then told the names of the occupations and was encouraged to discuss his choice. Relevant comments and time were recorded.

If time permitted, the procedure was repeated for three other occupations using the same questions generated with the first set of occupations. Time was recorded.

Description of Interview Schedule

The interview hour consisted of three parts: the oral interview schedule, the written interview schedule, and the value ratings sheet.

Each student's oral interview was tape recorded. A copy of the oral interview schedule is attached. (See Appendix A.) A manual for scoring the oral interview was developed. (See Appendix B.) The oral interview took approximately 20 minutes to complete. Ten students volunteered to have the oral part of their interviews videotaped. A panel of experts viewed the videotapes and each independently scored the interview with the use of the scorer's manual to determine scorer reliability. (See "Reliability of Scoring the Interview," p. 29.)

Next, each student was required to complete the written interview schedule without assistance from the interviewer. (See Appendix C.) The written part took approximately 20 to 30 minutes to complete.

The value ratings sheet comprised the final part of the interview. (See Appendix D.) This was completed without help from the interviewer in approximately 10 minutes.

All three parts of the interview took from 45 to 60 minutes.

After each interview, the interviewer wrote a paragraph about the student's performance and assigned a letter grade to indicate overall impression of the student's level of career decision-making.

Students who had not already played the SOC game were instructed to return in a week's time. Those who had completed the SOC game were finished with their participation in the project.

Description of SOC Measures

The SOC game was separated into three stages. Stage One consisted of the first five questions asked by the student; Stage Two consisted of any remaining questions asked by the student; Stage Three consisted of information requested from a list that was shown to the student after he finished asking questions on his own.

Distance measures were computed for each stage. In each case, the distance measure was the sum of distance moved between successive marker positions for questions asked during that stage. (e.g., DIST 1 was equal to the sum of the distances moved for questions one through five.) The initial point for computing the distance measure was taken as the midpoint of the scale.

A certainty measure (CERT) was also computed for each stage. This measure was the sum of the squared probabilities obtained from the student at the end of each stage.

Desirability sums were computed by multiplying the weights that students gave to ten occupational values by previously established ratings assigned to each of the SOC occupations for each of the ten values. (See p. 19.)

Frequency of Selection of Each Occupation in SOC Game, Spring 1974

All three occupations used in the SOC game were shown to be of medium desirability in a previous study. Based on a small sample of community college students, Retail Store Manager had an overall "desirability sum" of 101, X-Ray Technologist's "desirability sum" was 93, and Newspaper Reporter's "desirability sum" was 91 (on a scale ranging from 40 to 168).

There is no claim that the sample for the previous study was from the same population as the sample for field test #1. Nevertheless, the previous computed "desirability sums" served as a guide in choosing three occupations that would permit variation in student preferences. Obviously, we wanted to avoid a set of three that included one universally desirable occupation and/or one universally undesirable occupation. The fact that a substantial number of students chose each occupation in SOC demonstrates that the set of three occupations used does indeed fulfill this requirement.

Table II-2 shows the frequency with which all students selected X-Ray Technologist, Retail Store Manager, and Newspaper Reporter at the end of the SOC game.

Retail Store Manager was the occupation most frequently selected by all students (42%). Newspaper Reporter was the next most frequently chosen occupation (37%). X-Ray Technologist was selected least frequently (21%).

Ninth graders selected Retail Store Manager nearly one-half the time (49%). Newspaper Reporter was second (30%). X-Ray Technologist was selected least often; only 21% of the ninth graders chose it at the end of the SOC game.

TABLE II-2

FREQUENCY OF SELECTION OF EACH OCCUPATION IN SOC GAME, SPRING 1974

		X-Ray Technologist	Retail Store Manager	Newspaper Reporter
Students	Grade 9	21% (8)	49% (19)	30% (12)
	Grade 12	20% (7)	35% (12)	44% (15)
	Total	21% (15)	42% (31)	37% (27)

Twelfth graders, in contrast, selected Newspaper Reporter most often (44%). Retail Store Manager ranked second, selected by seniors 35% of the time. X-Ray Technologist, once again, was least frequently selected, seniors choosing this occupation only 20% of the time.

The "Desirability" of Occupations "Chosen"

Desirability sums for each occupation were computed by having each student rate the importance of 10 values to him (Values Rating Sheet, see Appendix D). A previously established rating for each occupation on each value was then multiplied by the weight each value had been given by the student. These products were then added to produce a desirability sum for each occupation. The higher the sum, the better the fit between the occupation and the student's values.

Differences of less than 5 points between desirability sums were ignored. Thus, a student choosing the occupation X-Ray Technologist with a desirability sum of 99 was regarded as having selected an occupation with the highest desirability sum even if the other two occupations had desirability sums of 100 and 101, since the difference between the scores was less than 5 points.

On the basis of the weights assigned to the 10 values, a student's "best" occupational choice in the SOC game would be one which had the highest desirability sum for him.

Table II-3(a) shows, by grade, the percentage of students whose occupational choice at the end of the self-generated questions (and before seeing the unsolicited information) was an occupation with the highest, second highest, or lowest desirability sum.

In most cases (62%) students chose the occupation which had the highest desirability sum. Seniors were slightly less likely (59%) to select an occupation with the highest desirability sum than were freshmen (66%).

Twenty-eight percent of all students selected an occupation with the second highest desirability sum. Seniors did so more often (35%) than did freshmen (21%).

Ninety percent of all students in the sample selected an occupation with either highest or second highest desirability.

Freshmen were twice as likely (13%) as seniors (6%) to select an occupation with the lowest desirability sum.

Table II-3(b) shows, by grade, the percentage of students whose occupational choice at the end of the game was an occupation with the highest, second highest, or lowest desirability sum. Overall, the percentage of students selecting an occupation of highest desirability remains the same (62%) as in Table II-3(a). However, differences now reversed by grade: at the end of the game, seniors were more likely (67%) to select an occupation of highest desirability than were freshmen (56%).

The overall percentage of students selecting an occupation of second highest desirability stayed much the same (31%). However, freshmen were more likely to select the second highest desirability occupation (36%) than were the seniors (27%).

TABLE II-3(a)

FREQUENCY WITH WHICH OCCUPATIONS AT VARIOUS LEVELS OF DESIRABILITY WERE CHOSEN AT END OF STAGE 2, SPRING 1974

		Highest Desirability	Second Highest Desirability	Lowest Desirability
Students	Grade 9	66% (26)	21% (8)	13% (5)
	Grade 12	59% (20)	35% (12)	6% (2)
	All Students (Total)	62% (46)	28% (20)	10% (7)

TABLE II-3(b)

FREQUENCY WITH WHICH OCCUPATIONS AT VARIOUS LEVELS OF DESIRABILITY WERE CHOSEN AT END OF STAGE 3, SPRING 1974

		Highest Desirability	Second Highest Desirability	Lowest Desirability
Students	Grade 9	56% (22)	36% (14)	8% (3)
	Grade 12	67% (23)	27% (9)	6% (2)
	All Students (Total)	62% (45)	31% (23)	7% (5)

At the end of the game, a slightly smaller percentage of all students (7% as opposed to 10% at the end of the self-generated questions) selected an occupation with the lowest desirability sum. Seniors did so to the same degree (6%) at the end of the game as at the end of the self-generated questions. Freshmen selected an occupation of lowest desirability five percent less often at the end of the game than at the end of the self-generated questions.

We had reasoned that students whose first choice on the SOC scales was the occupation with the highest desirability sum might be regarded as more competent in career decision-making than those whose first choice did not have the highest desirability sum. The finding that the 12th-graders were not clearly superior to the 9th-graders in this respect would call this reasoning into question if one were to assume that competency in CDM, measured in this way, was a correlate of age or grade. (We did not ourselves make this assumption; we believed, instead, that CDM competencies are learned, and may often be no better developed by 12th grade than by 9th.)

Comparing Types of Questions Most Frequenty Asked by Ninth and Twelfth Graders

Table II-4 shows in rank order the percentage of questions on various topics asked by ninth and twelfth graders. By comparing the two columns we can look for differences and similarities in the concerns of ninth and twelfth graders as expressed in the playing of the SOC game.

Questions about work activities, leisure, and salary appear with highest frequency in both groups. Ninth graders more frequently asked about education and physical surroundings; twelfth graders more frequently about variety and field of interest.

It is interesting that even though job activities were asked about most frequently by both groups, 20% of all the freshmen's questions but only 14% of the seniors' questions dealt with job activities, even though seniors tended to ask more questions. Seniors averaged 11.7 questions each and freshmen 9.4. Of the top three identical concerns, freshmen relied more heavily on questions soliciting information about activities.

Freshmen were more likely to ask about fringe benefits (rank 7) and dress regulations (rank 11.5) than were the seniors (fringe benefits ranked 16 and dress ranked 21). Seniors were more likely to ask about security (rank 8), independence (rank 12), personal contact (rank 10), and location (rank 16) than were the freshmen (security, rank 11.5; independence, rank 16.5; and location, rank 20.5).

Were freshmen much more concerned about dress required for an occupation (frequency 3.5%, rank 11.5) than seniors (frequency 1.2%, rank 21), or did they find it harder to formulate questions about more abstract characteristics, like independence? We don't know to what extent such differences in frequency represent differences in importance attached to a characteristic or differences in conceptualization.

Little difference was observed in the frequency with which ninth and twelfth graders asked for information in such areas as co-workers, advancement, helping others, outlook, prestige, type of employer, leadership, personal qualifications, danger, or pressure.

TABLE II-4

RANK ORDER AND FREQUENCY OF TOPICS ASKED ABOUT

Rank (12)	Rank (9th)	Topic	% of Total Questions Asked	
			Grade 12	Grade 9
1	1	Activities	14%	20%
2	2	Leisure	12%	10.5%
3	3.5	Salary	8%	8%
4	6	Variety	7.5%	5%
5	3.5	Education	7%	8%
6	8	Field of Interest	6%	4.3%
7	5	Physical Surroundings	5.5%	6.5%
8	11.5	Security	4.5%	3.5%
9	9	Co-Workers	4.2%	4%
10	16.5	Personal Contact	4%	2%
12	14	Advancement	3.7%	2.7%
12	10	Helping Others	3.7%	3.7%
12	16.5	Independence	3.7%	2%
14	14	Outlook	2.7%	2.7%
16	7	Fringe Benefits	2.5%	4.6%
16	20.5	Location	2.5%	1%
16	14	Prestige	2.5%	2.7%
18	18.5	Type of Employer	1.7%	1.3%
19.5	20.5	Leadership	1.5%	1%
19.5	18.5	Personal Qualifications	1.5%	1.3%
21	11.5	Dress Regulations	1.2%	3.5%
22.5	22.5	Danger	--	.5%
22.5	22.5	Pressure	--	.5%
		Total # Questions Asked	399	369

Attractiveness of SOC Occupations

The occupations chosen for SOC were ones that were likely, on the basis of previous research, to appear equally attractive across students. To corroborate this point, average attractiveness scale positions were computed for each occupation for each move made in response to an item of interest. All students made at least five moves. The number of students asking additional questions and making corresponding moves then dropped off steadily with only two students making thirteen moves. Table II-5 presents the means and the corresponding standard deviations of the scale positions of the markers for the three occupations after each successive move.

From this table it can be seen that:

- All three occupations are of mid-attractiveness (the midpoint of the scale is 10).
- The means for the occupations remain fairly stable across moves. This observation is somewhat less applicable to the means for Newspaper Reporter, which tend to increase gradually across the first nine moves. (After move nine there is a sharp decrease in the number of students, thus making the statistics less stable.)
- Like the means, the standard deviations remain fairly constant across occupations and moves. This is somewhat surprising since it was anticipated that the three occupations would tend to diverge across moves for any one student. This tendency in turn would have had the effect of increasing the variability of an occupation across students. Figure B(1) plots the scale movement for a student who fulfilled this expectation. But Figure B(2) represents the more typical behavior, in which such positions converge. This finding suggests that when choices are difficult, between well-balanced options, increments in information are likely to make the subjective desirabilities of the options appear closer rather than more distant.

Means and Intercorrelations of SOC Measures

Means and standard deviations for SOC measures of distance and certainty, by grade, are presented in Table II-6. There are virtually no differences between the grade samples on either the distance or certainty measures.

Also shown in Table II-6 are the mean number of questions asked (Stages One and Two) and the mean number of items selected from the list presented in Stage Three. While the grade 12 mean number of questions asked is higher than the grade 9 mean, the difference is not significant.

The measure Top 5 represents the number of questions asked in Stage One about a student's five highest rated values. This information was obtained from students' ratings of ten occupational values made after completing both the game and the interview. The Top 5 measure also shows no significant group difference.

TABLE II-5

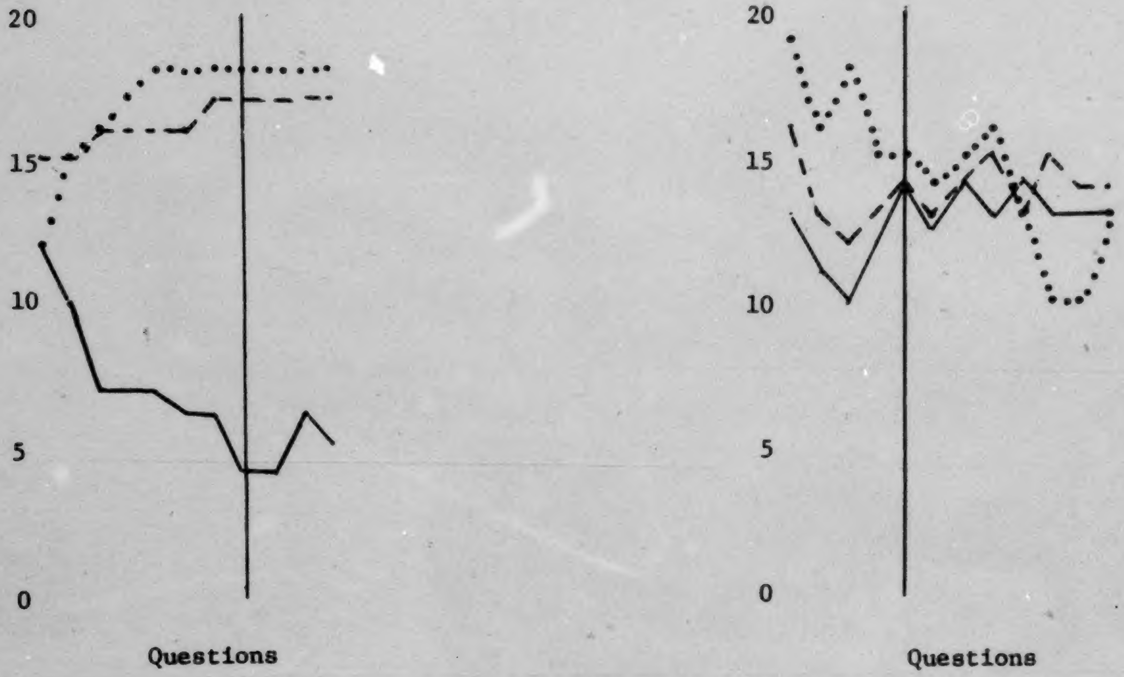
AVERAGE ATTRACTIVENESS OF SOC OCCUPATIONS

(After each move)

	Move No.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
X-Ray Technologist	$\overline{X}$	10.89	10.78	10.82	11.10	11.31	10.52	10.30	10.31	10.26	10.73	11.27	11.40	13.50
	S.D.	3.40	3.35	3.46	3.48	3.54	3.78	3.36	3.27	3.25	3.75	5.06	4.84	2.50
	N	73	73	73	73	73	57	49	38	30	19	11	5	2
Retail Store Manager	X	12.12	12.50	12.84	12.51	12.72	12.22	12.14	12.36	12.76	12.05	11.90	12.20	11.00
	S.D.	3.27	2.9	2.74	2.74	2.89	3.68	3.45	3.09	3.19	3.60	4.56	4.26	6.00
	N	73	73	73	73	73	57	49	38	30	19	11	5	2
Newspaper Reporter	$\overline{X}$	11.69	11.66	11.85	12.38	12.81	12.68	13.28	13.57	13.66	13.00	13.81	11.40	10.50
	S.D.	3.01	2.85	2.84	3.70	2.79	3.21	2.35	2.33	2.37	2.00	2.03	2.41	0.50
	N	73	73	73	73	73	57	49	38	30	19	11	5	2

FIGURE B

A PLOT OF MARKER MOVEMENTS FOR TWO STUDENTS



(1) Student No. 10

(2) Student No. 15

TABLE II-6

MEANS AND STANDARD DEVIATIONS OF SOC MEASURES, SPRING 1974

	Grade 9		Grade 12	
	$\overline{X}$	S.D.	$\overline{X}$	S.D.
Dist 1	16.9	6.3	16.6	8.9
Dist 2	5.3	5.7	6.6	5.5
Dist 3	7.8	6.8	5.3	4.7
Cert 1	.45	.16	.46	.15
Cert 2	.55	.36	.52	.16
Cert 3	.50	.17	.54	.16
# Questions Asked	7.3	2.5	8.5	2.0
# Questions Stage 3	3.4	2.1	3.1	2.2
Top 5	1.5	.9	1.6	.7

Table II-7 gives the intercorrelations between the SOC measures for ninth and twelfth grades combined. From this table it can be seen that:

- The distance measures are relatively independent of one another and of the certainty measures.
- There is a moderate relationship between the certainty measures.
- There are moderate negative relationships between the number of questions a student asks (Stages One and Two combined) and the distance moved in Stage One (DIST 1) and in Stage Three (DIST 3). The high correlations between the number of questions asked and DIST 2 is an artifact of the scoring procedure.

TABLE II-7

INTERCORRELATIONS AMONG SOC MEASURES, SPRING 1974

(9th and 12th Grades Combined)

	Dist 1	Dist 2	Dist 3	Cert 1	Cert 2	Cert 3	#Ques.Asked	Top 5
Dist 1	1.00							
Dist 2	.10	1.0						
Dist 3	.27	-.20	1.0					
Cert 1	.21	.07	.03	1.0				
Cert 2	.01	-.02	.05	.30	1.0			
Cert 3	.06	-.13	-.10	.49	.35	1.0		
#Ques. Asked	-.34	.67	-.32	-.03	-.07	-.04	1.0	
Top 5	-.10	-.19	-.09	-.20	.19	.01	-.13	1.0

Interview Measures, Means, and Intercorrelations

Six scores were derived from the oral and written schedules. The item composition of these scales is as follows (the letter O represents an item from the oral interviews and the letter W represents an item from the written interview):

Constructs = 01 + 02 + 03 + 011 + 014
Information = 07 + 010 + W (8-25) + W (26-29)
Reality = 04 + 05
Planning = 06 + 08 + 09 + W35
Control = 012 + W (30-34)
Awareness = 013 + W (36-39)

Means and standard deviations for the ninth and twelfth grade samples on the six interview measures are presented in Table II-8. The mean scores for twelfth graders are found to be higher on all six measures, with the difference between the grade samples reaching significance for only three of the measures (Constructs and Planning at the .01 level; Information at the .05 level).

TABLE II-8

MEANS AND STANDARD DEVIATIONS FOR INTERVIEW SCALES, SPRING 1974

	9th Grade		12th Grade	
	X	S.D.	X	S.D.
** Constructs	9.45	2.76	11.47	3.52
* Information	7.37	1.55	8.15	1.59
Reality	1.97	0.89	2.31	0.85
** Planning	2.33	1.02	3.77	1.25
Control	5.49	1.20	5.53	1.58
Awareness	10.32	2.68	11.49	2.50
** Total Oral	17.85	4.05	21.86	4.52
* Total Written	19.06	3.98	21.08	3.62

* $p < .05$ ** $p < .01$

Table II-9 gives correlations among the six interview scales for the combined ninth and twelfth grade samples. The table shows that the correlations are, in general, quite low, thus indicating that the measures are relatively independent. Exceptions are the cluster of moderate relationships involving Awareness, Constructs, and Information scales.

TABLE II-9

INTERCORRELATIONS BETWEEN INTERVIEW SCALES, SPRING 1974

(9th & 12th Grades Combined)

	Const.	Info.	Real.	Plan.	Cont.	Aware.
Constructs	1.00					
Information	.39	1.00				
Reality	.23	.25	1.00			
Planning	.24	.33	.09	1.00		
Control	.08	.15	.24	.12	1.00	
Awareness	.44	.56	.23	.15	.17	1.00

Reliability of Scoring the Interview

As a check on the reliability of scoring the oral part of the interview, a panel of six judges scored ten videotaped interviews. Prior to the formal scoring, a practice session was held in which two videotapes were viewed, discussed, and scored as a group. During this session the scorer's manual was reviewed and disagreements about scoring discussed. By the end of the session the judges were satisfied that they understood the basis and mechanics of scoring.

Three of the six interview scales (Constructs, Reality, and Planning) drew most of their items from the oral (as opposed to the written) part of the interview. For the sake of this inter-rater reliability study, scores for each of these scales were based only on responses given in the oral interview. A total score of all responses in the oral interview was also computed.

Following an analysis of variance [Winer, 1962, Chapter 4], the reliability coefficient for a single rating was computed. Table II-10 gives estimates of the scorer reliabilities for the Constructs, Reality, Planning, and Total scales.

TABLE II-10

SCORER RELIABILITIES

Scale	# Items	Reliability
Constructs	5	.77
Reality	2	.79
Planning	3	.47
Total	13	.83

The low scorer reliability for the Planning scale suggested that it was an inappropriate measure and required revision. For example, question 8 of the interview asked students to name an alternative to their previously indicated occupational preference and plans. In response to this question students typically name an alternative occupation but did not name alternative plans.

(Incidentally, it should be pointed out that the Planning scale was augmented by an item on the written schedule. This was not considered here, since scoring reliability was not an issue for the written responses.)

One last point needs to be made. The reliabilities presented in Table II-10 are scorer reliabilities and not scale reliabilities. Indeed, the scorer reliabilities represent an upper bound for the scale reliabilities. No attempt was made to study the various kinds of scale reliabilities at this stage.

SOC and Interview Intercorrelations

If SOC and the interview were measuring the same traits, one would expect the scores to be intercorrelated. In the course of the research, however, some serious shortcomings were noted in the scoring procedures for both instruments, which tended to obfuscate our findings.

Correlations between SOC and interview scores are presented in Table II-11. The table shows that:

- With few exceptions, the correlations between SOC and the interview scores are low.
- There is a significant negative relationship between Constructs and Dist 1 (sum of the distances moved for the first five questions). This relationship is partly an artifact of the scoring procedure. The initial point from which distance is computed (i.e., the impact of the information received in response to question one) is the mid-point of the scale. It would seem that students with few constructs at their disposal tend to attach heavy importance to their first question. Thus, they initially place the markers quite far from the mid-point of the scale. Successive distances, which are measured point-to-point, are small by comparison and their effect tends to be washed out. An obvious means for correcting this problem would be to have the student make each move independent of previous moves, and only then consider all information cumulatively for the final placement of the markers. A procedure for accomplishing this was developed and tried out in field test #2.

- There is a significant negative relationship between Constructs and Dist 3 (sum of the distances moved for questions selected from the list). This finding is in keeping with what was hypothesized. It shows that students with many available constructs do not tend to attach much importance to unsolicited information presented to them after they have had the opportunity of asking their own questions and getting the information they regard as salient.

TABLE II-11

CORRELATIONS BETWEEN SOC AND INTERVIEW

(9th & 12th grades combined)

	Dist 1	Dist 2	Dist 3	Cert 1	Cert 2	Cert 3	#Ques. Asked	Top 5
onstruct	-.37*	.25	-.40*	.00	-.12	.13	.44*	.05
nformation	-.13	.29	-.04	.13	.07	.20	.35*	-.09
eality	-.15	.20	-.17	-.11	.00	-.07	.25	.12
lanning	-.10	.21	-.17	-.18	.12	.15	.26	.16
ontrol	.11	.02	.06	.11	-.02	-.06	-.13	.05
areness	-.14	.07	-.14	.28	-.05	.26	.22	.03

$p < .01$

Relative Distance Measures

As expected, one of the problems we had to deal with was large stylistic differences in the use of the response scale. In an attempt to eliminate variance attributable to these differences, ratio scores were derived.

One measure, referred to as adjusted distance (Adj Dist), was taken as the ratio of the original distance measure divided by the total distance moved by a student in the pre-game dessert trial. Means and standard deviations for 9th and 12th graders for adjusted distances for Stage One and Stage Three of SOC are:

	9th		12th	
	X	S.D.	X	S.D.
AdjDist1	1.65	1.33	1.64	1.19
AdjDist3	.81	.72	.56	.47

Correlations between adjusted distances, original distances, and interview scores for grades nine and twelve combined are shown in the Table II-12.

TABLE II-12

CORRELATIONS BETWEEN ADJUSTED DISTANCE, DISTANCE, AND INTERVIEW SCORES
(Grades 9 and 12 Combined)

	AdjDist1	AdjDist3
Dist 1	.54	.24
Dist 3	.14	.83
Construct	-.18	-.34
Information	-.05	-.04
Reality	-.08	-.16
Planning	.11	.00
Control	.01	-.01
Awareness	.05	-.05

Comparing these correlations with those between the interview measures and DIST 1 and DIST 3 indicates that the effect of the division by the trial distance is to decrease the magnitude of the correlations.

Another approach to adjusting stylistic variables was to use DIST 1 as a means for calibrating the scale for DIST 3. That is, the distance moved in Stage Three of the game relative to that moved in Stage One reflected the impact of unsolicited information relative to the impact of information received in response to the first five questions asked. This measure (DIST 3/1) is particularly useful since it not only eliminates stylistic variance but is also readily interpretable in terms of what occurred in the course of the game. For example, a large value of DIST 3/1 means that a student failed to freely frame questions about factors that were (in his own scheme of things) important, while the opposite is true for small values of the ratio. Unfortunately, the number of questions asked in Stage Three confounds this measure and it does not correlate as highly with the interview measures as the unadjusted distance measures. It was clear that procedures for scoring behavior on SOC needed reexamination.

Other Findings

The enthusiastic responses and unsolicited comments of both ninth and twelfth graders led us to believe that SOC might be effectively used as a teaching tool. The SOC game provided the student with an opportunity to participate, frequently for the first time, in a career decision-making situation. For the vocationally immature, the game introduced the problems and complexities of career choice; for the more vocationally mature, the game provided an opportunity to explore the kinds of information that are important to career decisions. Students could also analyze their own deficiencies with regard to information seeking, especially career information. During the field test, many students offered comments which demonstrated their confusion and lack of information. For example, one articulate senior volunteered, "I sure could use some value clarification." And one ninth-grade girl pointed out the need for defining the vocabulary of the world of work by commenting upon learning that a given occupation required a bachelor's degree for entry, "I guess I wouldn't be able to do that--I'm a girl."

The format of SOC was completely non-threatening since it was a game and was viewed as such by the students. It did not communicate a sense of failure since there are no right or wrong answers. However, the students did not participate in an offhand manner. Indeed, just the opposite seems to be the case. Students not only got caught up in playing the game, but were stimulated to ask questions beyond the actual game situation.

Briefly, some of the characteristics that would make SOC an ideal teaching device are:

- Involvement. The game involves active participation by having students think up and phrase questions to be asked, evaluate information and move the markers accordingly. And, of course, they must ultimately make a decision that seems best to them.

- Self-Knowledge. In playing SOC students become aware of their lack of knowledge about themselves and the world of work. They are stimulated to ask a broad array of questions related to career choice.

- Enjoyment. The game format is pleasant and provides a nice change from the commonplace teaching techniques of reading, research, question answering, paper writing, or lecturing and note-taking.

- Exploration. It would be possible to use the student's present occupational preference as one of the three occupations. The students could then see the impact of various kinds of information and notice what things made his occupational choice more desirable.

- Relevance. The connection between SOC and a real-life problem is immediately apparent to students. After the game students can seek out the kind of information they felt was important to them during the SOC game.

Main Interpretation of Preliminary Results

During the first year of research we encountered problems of a scope and complexity to indicate that an extension of the formative stage of study would be required. Some of the findings that led us to this conclusion are indicated below:

Decrease in differentiation. Originally, it was anticipated that as students asked questions their options would become more differentiated. An example of this behavior was shown in Figure B(1), a plot of the scale positions for each of the questions asked by student #10 (p. 25). The vertical line represents the end of freely elicited questions and the beginning of items selected from a list. However, this was not found to be typical behavior. Rather, a gradual decrease in differentiation was typically noted, as shown in Figure B(2).

Looking back, we see that this behavior makes sense. What it suggests is that when students have only one or two important dimensions in which to characterize their options, they can differentiate them well. As more dimensions are added, they are likely to find conflicting information about each option, which brings the options closer together in attractiveness. This reasoning suggests that most important decisions are difficult just because they are between options that are very close together.

Decrease in certainty. The certainty measures, which were also expected to increase with the amount of information received, reflected instead the gradual coming together of the options. For the Grade 9 sample, information presented after students finished phrasing their own questions tended to decrease the certainty of their choice. In other words, the unsolicited information made students less certain.

Stylistic differences. One of the lesser problems, but a bothersome one nevertheless, concerns the response mode. Large stylistic differences in the use of response scales led us to believe that the scales (and possibly the task itself) needed to be more clearly defined. Our original intention of using the pre-game trial situation as a means for partialling out unwanted stylistic differences did not seem an adequate solution. This was likely due, at least in part, to the dual nature of the pre-game trial itself. First and foremost, it was a learning situation in which the student learned the nature of the task and of the scales, not an optimal setting for defining a response mode.

Learning factor. Another aspect of SOC that we had not originally considered is its built-in instructional capacity. Students clearly learn in the course of playing the game. The game's potential as an instructional device is enormous (see page 33), but unless this element is incorporated into our evaluation, it becomes unwanted noise. Further revisions of SOC attempt to equalize the learning factor by limiting the question-asking part of the game and concentrating on the effects of unsolicited information.

Low SOC/interview correlations. The low correlations noted between SOC and the interview measures gave us considerable food for thought. While the interview itself needed revision, we had expected to find clearer relationships between the two sets of measures. Our failure to find them made us stop to think--often a valuable activity in developmental research.

In rushing to compute correlations between SOC scores and other criteria, we had obviously got ahead of our game. We had not given sufficient thought to the implications of each score. Taken by itself, each score represented an operational definition of some construct; but the behaviors themselves (and therefore the measures) turned out to be extraordinarily complex, involving chains of interaction with other behaviors.

Here, in a sense, we lucked out: had the correlations, by some fluke of circularity or compensating goofs, been generally significant, we might have taken them to be evidence of construct validity and never examined more closely the wrinkles in the scoring that really had to be ironed out. The paucity of significant r's sent us back to reconsider the scoring rationale--the definition of each score, the behaviors on which each was based, the context of those behaviors, the intrinsic meaning that might be derived from it.

The very virtues of simulation--verisimilitude, face validity of tasks, free response situations, opportunities for branching as the individual interacts with the tasks, and evocation of complex behaviors--make scoring messy. We wanted scores that represented behavior as directly as possible, were sensitive to individual differences, and would provide diagnostic information. If we could derive scores with such characteristics from students' behavior in SOC, we might be presumed to have a better criterion than anything external to SOC. Then it would be appropriate to see what these scores correlated with to look at differences between groups that might be presumed to differ in CDM competencies, and to seek other signs of convergent and discriminant validity. The scoring problems were really indicators of procedural problems. So for the second year of the project we went back to the drawing board and revised the simulation procedures themselves in an effort to produce sounder observations and scores.

Further Field Tests

During the second year of the study, SOC underwent two major revisions, each followed by a field test. In the first of these (Fall 1974), students were administered both SOC and an interview. An analysis of these data indicated that SOC needed further revisions. To help formulate appropriate changes, a series of in-depth interviews were conducted in which students were queried about their game behavior under varying game conditions. One outcome of these interviews was a revision of SOC procedures with particular concern given to making the administration of the game clearer and shorter. Also developed was a new set of diagnostic measures aimed at describing the extent to which students were able to get and use appropriate kinds of information.

Chapters III and IV describe the Fall 1974 and Spring 1975 field tests.

CHAPTER III

FIELD TEST 2 (FALL 1974)

The Fall 1974 SOC procedures differed from the preliminary version in two major respects: (1) the information given to students was scrambled so as not to be associated with any particular occupation, and (2) students were given unsolicited information about each occupation's potential for satisfying certain values. Procedures and outcomes of the Fall 1974 field test follow.

Administration Schedule

The administration schedule used in the Fall 1974 field test was the same as that used the previous spring. Two separate hours of each student's time were needed to complete the project. Half the students played the SOC game during the first hour; the other half were interviewed first. A week usually elapsed between the first and second parts of the study. During the second hour, students who had played SOC first were interviewed, and vice versa. To avoid contamination, a student played the game with one researcher and was interviewed by another researcher.

Description of Sample

The four area schools participating in the second field test were the same ones used in the Spring of 1974 for the first field test. Two were four-year schools from which both freshman and seniors were drawn. The other two were complementary junior and senior high schools from the same district.

The same procedures for selecting the sample and eliciting student participation were used. Parent permission was required as before.

Of the 124 students initially contacted (See Table III-1), 84 agreed to participate. Of the 84 who agreed, complete data were collected for 38 ninth graders (21 girls and 17 boys) and 34 twelfth graders (19 girls and 15 boys).

Table III-1

DESCRIPTION OF SAMPLE, FALL 1974

	Grade 9			Grade 12			Total Gr. 9 & Gr. 12		
	No. Contacted	No. Agreed	No. Completed	No. Contacted	No. Agreed	No. Completed	No. Contacted	No. Agreed	No. Completed
School A	23	15	13	20	13	12	43	28	25
School B-1	18	14	13				39	30	27
School B-2				21	16	13			
School C	24	15	12	18	11	9	42	26	21
TOTAL	65	44	38	59	40	34	124	84	72

SOC Procedures, Fall 1974

The student was confronted with the task of selecting one of three unidentified occupations which he would most like to prepare for. To help make this choice, the student could ask five questions. Since the occupations were not real, the student was advised not to try to guess what they were but rather to ask about those characteristics that were of major importance in making a career choice.

The game was divided into three parts. In Part 1, after the task had been fully explained, the student was given a few minutes to think about the kinds of questions to ask and was provided with paper in order to make notes. Questions were asked and answered one at a time. Answers to questions were first given with the order of occupations scrambled so that each item of information would be considered independently. Each time the student asked a question, the interviewer wrote a shortened form of the question in the question column on the game board, provided answers (on information cards) in scrambled order, obtained the student's ratings of the occupations (as indicated on the attractiveness scale), recorded the ratings (on the recording form), and then placed the information cards, in correct order (i.e., associated with appropriate occupation), into the cutouts in the game board.

After the student's first five questions had been answered, the game board, on which answers to these questions had been accumulated in correct order, was shown to the student. The student was then asked to rate the overall attractiveness of the occupations and to designate which one he would choose to prepare for.

In Part 2, the student was given a second opportunity to obtain information about the occupations. At this stage of the game, instead of freely framing questions, a student selected from lists provided. The lists contained items of information that fell into three categories: Occupational Values, Abilities and Other Requirements,and Working Conditions. A short definition of each item in these categories was also provided. The student was asked to select a total of three items about which he would like information. As in Part 1, the information for each item was first presented independent of any association with the other information, and the student rated the attractiveness of each occupation as if this were the only piece of information available about it. The game board, on which responses for these three questions were sorted according to occupations, was shown to the student with the information from Part 1 covered. The student then rated the attractiveness of each occupation and made a choice of one occupation on the basis of responses to the three questions taken together.

In Part 3, the student was given information about three occupational values that he had not asked about. Once again, the information for each value was first presented independent of any association with the occupations; then ratings based on the single items of information were made; ratings based on the three unsolicited value items were made (information from Part 1 and Part 2 were covered); and the student chose the occupation preferred.

Next, the student reviewed all the questions that he had asked, plus the three questions that had been posed and answered by the interviewer. The student assigned a rating to each question to indicate its importance to him.

Finally, the student saw all the items of information on the game board, sorted according to occupation, and made a comprehensive rating of the three occupations as well as a final choice. The "real" names of the occupations on which the SOC occupations were based were then revealed.

Description of Materials

The game materials included (1) a game board and pad, (2) occupational information, (3) two rating scales, one for occupations and one for questions, and (4) a recording form.

Game board. The game board (Figure C) was used to record a shortened form of a student's question and to accumulate information given in response to questions asked. Typically, the student and interviewer were seated side by side at a table. The SOC game board was placed to one side of the interviewer, so that the interviewer could write on the board and place information cards there without interfering with the flow of the game. Though the game board was fairly sturdy and could be supported on one's lap, it was generally easier to work at a desk or table.

The board itself was a 13" x 19" rectangle made of two sheets of oaktag. It had four columns of cutouts, each cutout 1-1/4" x 2-1/4" in size to accommodate information cards. A sheet of paper on which the examiner wrote, in shortened form, the question a student had asked, was placed under the first column. The second, third, and fourth columns were used to accommodate responses to each question by the insertion of information cards into the cutouts. At the completion of the game, the information cards were picked up and replaced in a folder for use the next time the game was played. The sheet of paper on which the interviewer noted the student's questions was sometimes retained, although this was not usually necessary since the interviewer also noted the student's questions on the recording form.

Occupational information. The interviewer possessed a complete array of information about the SOC occupations. The SOC occupations were not real but were modeled on real occupations in such a way that their characteristics were sometimes more extreme and more clearly differentiated than is actually the case. Information about the occupations had been typed on cards (Figure D), sorted into categories, and displayed in the SOC folder for easy retrieval by the interviewer (Figure E). Cards specific to each of the SOC occupations were available for all items on the lists of Values, Abilities and Other Requirements, and Working Conditions, as well as for other questions frequently asked by students.

FIGURE C
SOC GAME BOARD

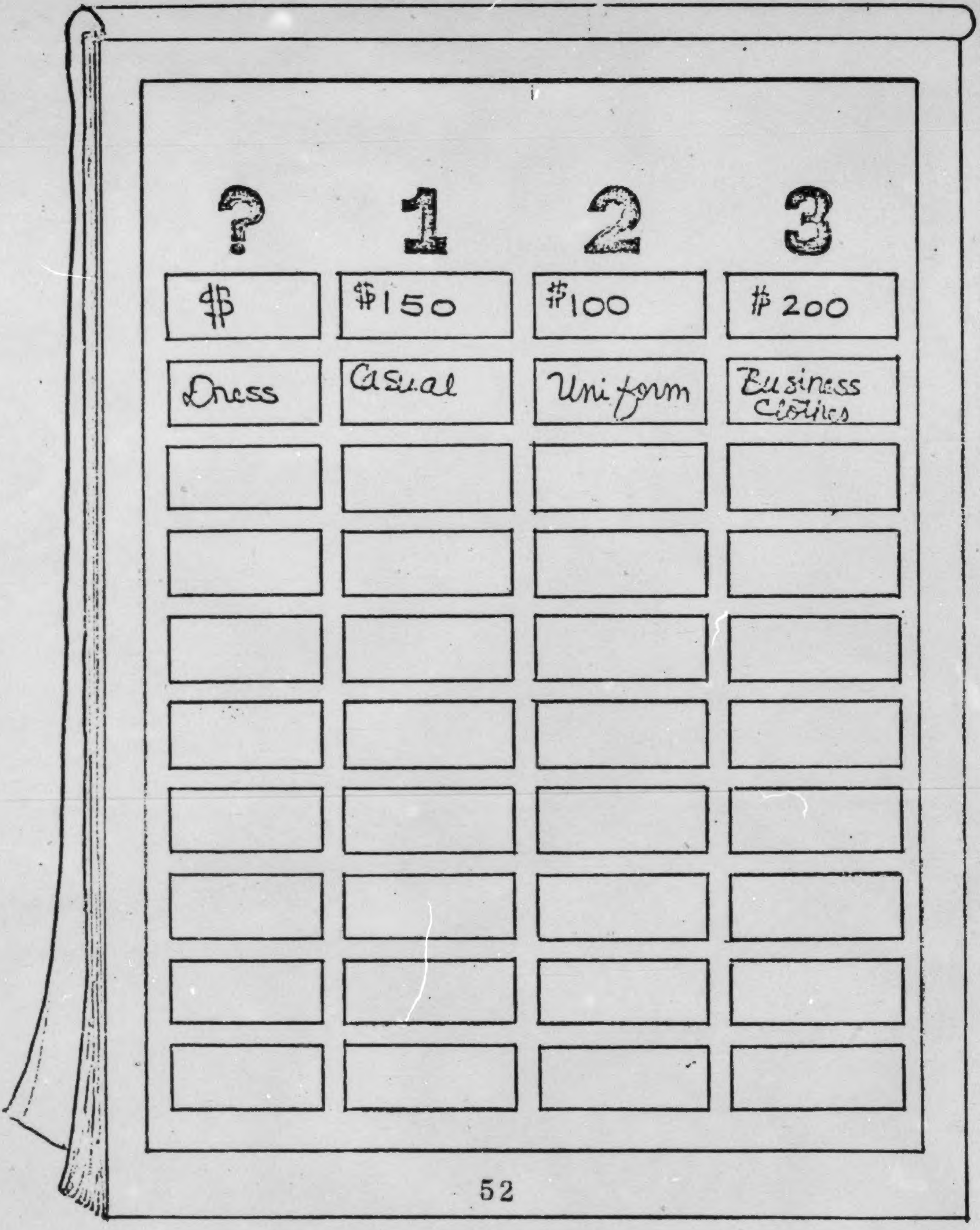

?
1
2
3
$
$150
$100
$200
Dress
Casual
Uniform
Business Clothes

FIGURE D

SAMPLE INFORMATION CARDS

Sample Information Cards for "Occupational Training" Question:

Training program given by employer

Learn on-the-job

Practical work experience is part of formal education

Sample Information Cards for "Dress" Question:

Business clothes (suit or dress)

Casual clothes; neat appearance.

Uniform

Sample Information Cards for "Travel Opportunities" Question:

Must travel once or twice a year

Local travel each day

None required

Sample Information Cards for "Variety" Question:

AVERAGE: Solves different problems. (Same people, same place.)

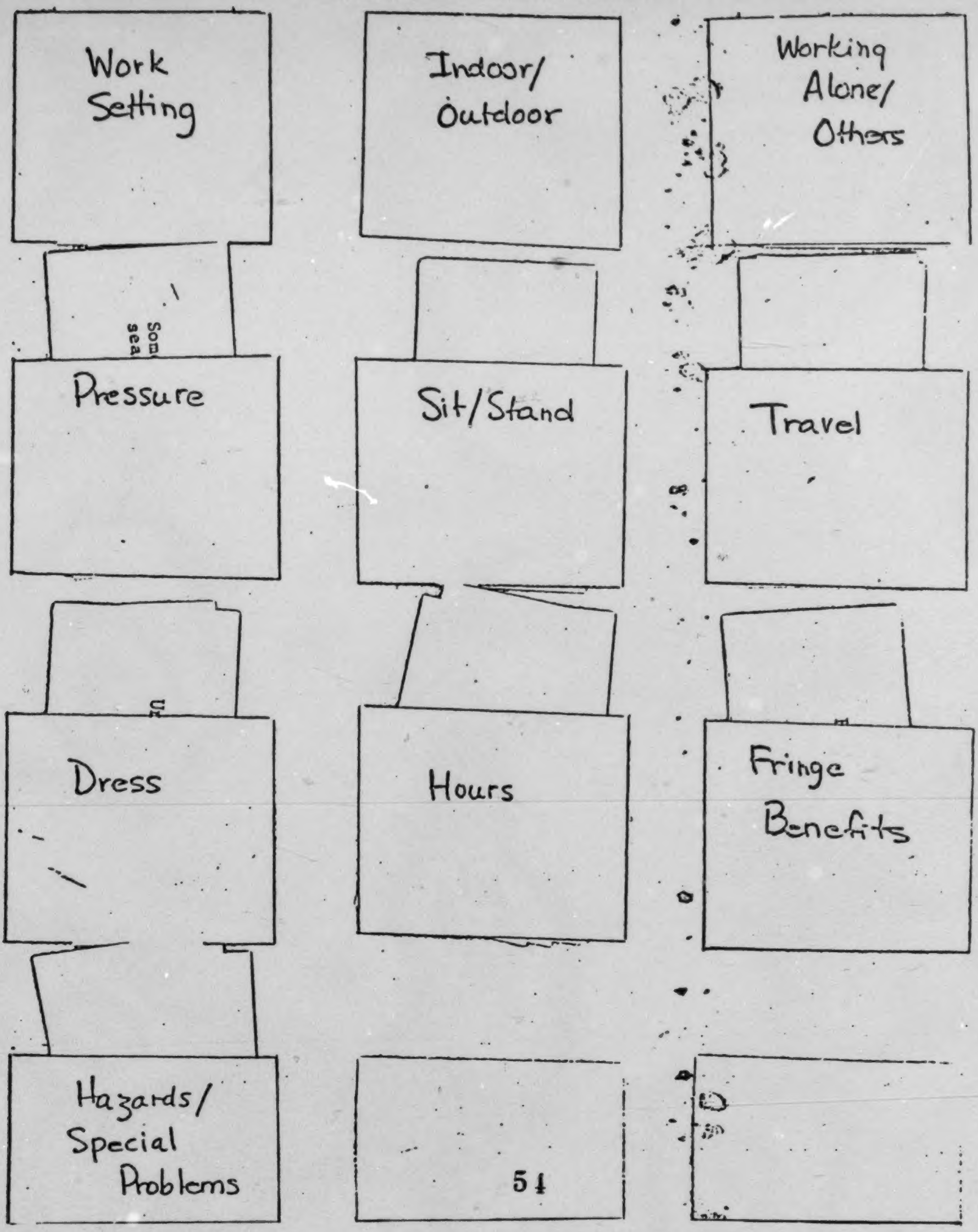
GREAT: Meet different people, go different places, solve different problems.

LESS: Activities follow a set pattern. Meet different people in same room.

Indicates relative amount.

FIGURE E

OCCUPATIONAL INFORMATION FOLDER


Work Setting
Indoor/ Outdoor
Working Alone/ Others
Pressure
Sit/Stand
Travel
Dress
Hours
Fringe Benefits
Hazards/ Special Problems

Cards were developed for the following categories of questions:

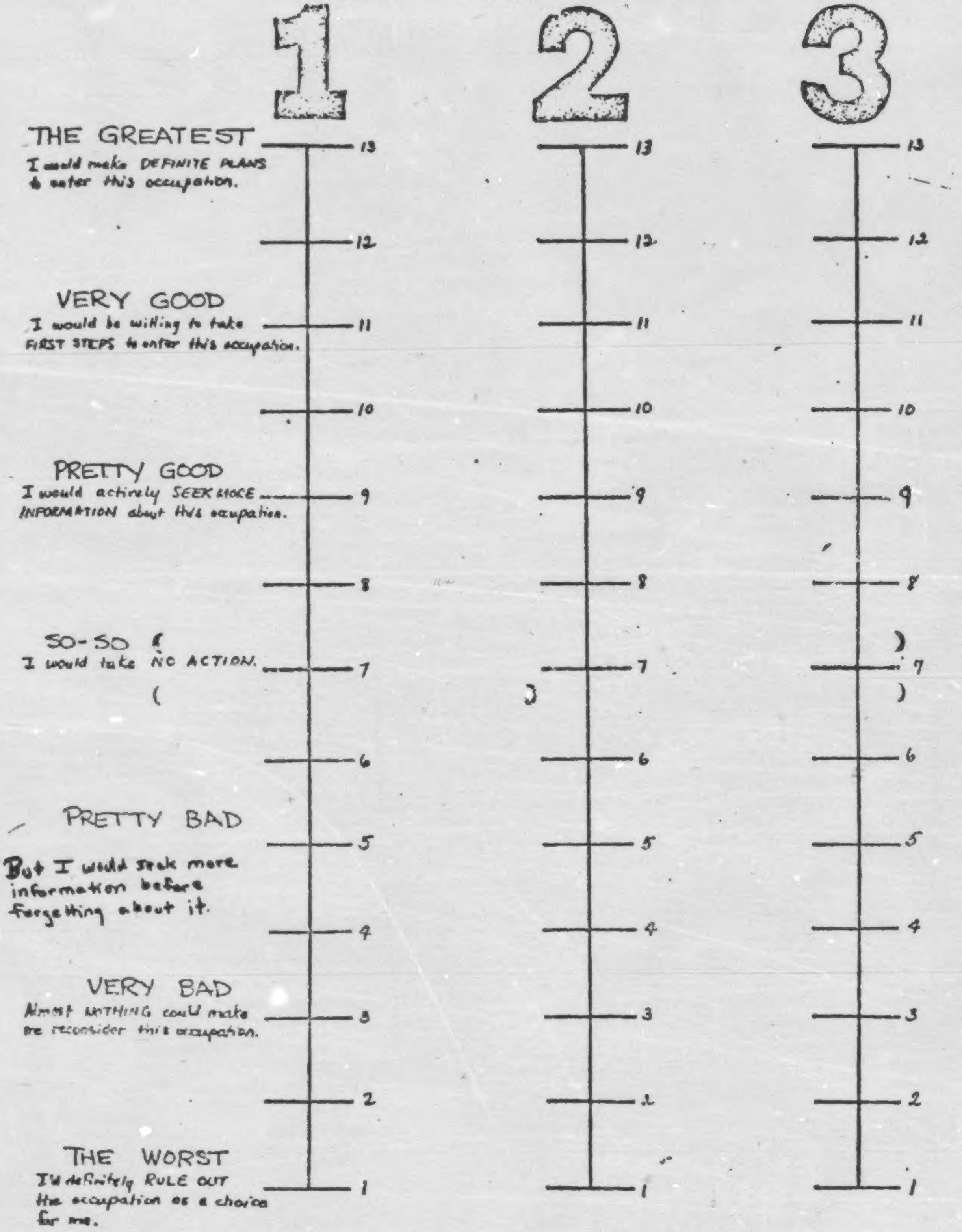
Salary (beginning, median)--weekly, hourly, or annually
Field of Interest
Opportunities to Help Others
Amount of Independence
Opportunities for Leadership
Amount of Leisure Time
Amount of Prestige
Amount of Job Security
Amount of Variety in People, Places, and Activities
Minimum Education Required
Occupational Training Needed
Amount of Pressure on the Job
Managerial Abilities Required
Clerical Abilities Required
Manual Abilities Required
Numerical/Mathematical Abilities Required
Verbal Abilities Required
Artistic or Musical Abilities Required
Travel Opportunities
Dress Regulations
Daily Working Hours
Fringe Benefits
Special Problems/Occupation Hazards
Advancement Opportunities
Opportunities to Work with Children
Opportunities to Work with Animals
Research/Desk Work Required?
Location of Employment
Employment Outlook
Self-Employment Opportunities
Usual Vacation Time
Percent of Women in the Field
Physical Work Surroundings
Working Indoors or Outdoors
Working Alone or with Others

Occasionally a student asked a question for which no information cards existed. When this occurred, the interviewer wrote appropriate answers on three blank cards and inserted them into the cutouts in the same manner as the pre-developed cards. Interviewers were expected to be thoroughly versed in the three occupations and to be capable of developing answers which had verisimilitude, yet which clearly differentiated the occupations. Descriptions of the occupations on which the SOC occupations were modeled and guidelines for generating answers to questions not anticipated were prepared for this purpose.

Rating scales. To rate the attractiveness of the three occupations, the student placed markers (labeled "1," "2," and "3" to correspond with occupations numbered "1," "2," and "3") on Rating Scale No. 1 (Figure F). The scale was anchored with two kinds of descriptors. The first, in bold letters, referred to the levels of attractiveness (e.g., so-so, pretty good), while the second was action-oriented and related to what students might or might not want to do as a result of what they knew about the options (e.g., I would make definite plans to enter this occupation).

FIGURE F

RATING SCALE NO. 1


1
2
3
THE GREATEST
I would make DEFINITE PLANS to enter this occupation.
VERY GOOD
I would be willing to take FIRST STEPS to enter this occupation.
PRETTY GOOD
I would actively SEEK MORE INFORMATION about this occupation.
SO-SO
I would take NO ACTION.
PRETTY BAD
But I would seek more information before forgetting about it.
VERY BAD
Almost NOTHING could make me reconsider this occupation.
THE WORST
I'd definitely RULE OUT the occupation as a choice for me.
13
12
11
10
9
8
7
6
5
4
3
2
1

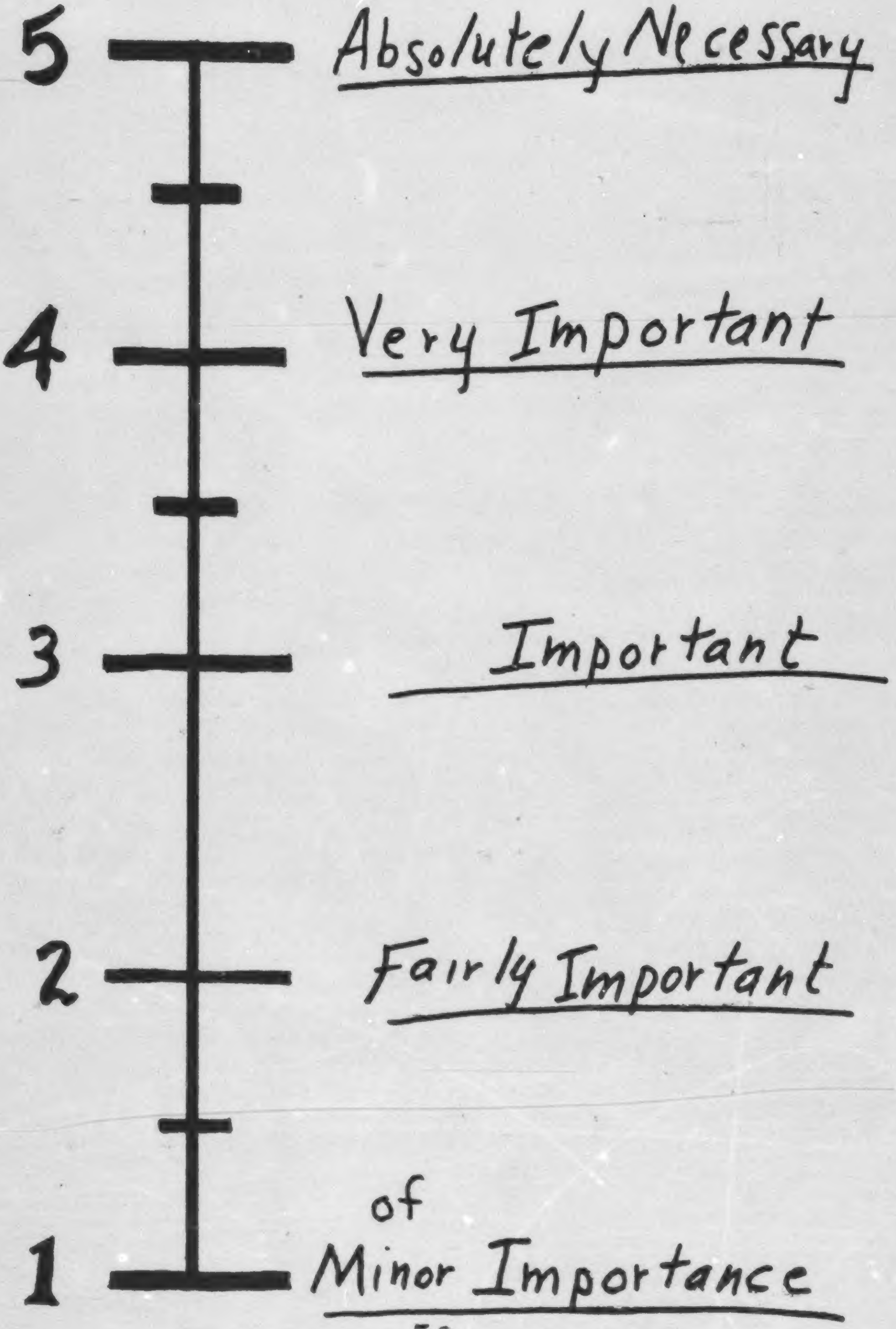
The scale on which students rated the importance of the questions themselves (i.e., how important it is for a student to learn about the dimension queried when deciding on his own career) ran from a low of 1 (of minor importance) to a high of 5 (absolutely necessary). (See Figure G.)

Recording Form. A copy of the recording form is shown in Figure H. In the column numbered "1," the interviewer recorded the student's scale positions (indicating the attractiveness of the three occupations) after the first question had been answered. Similarly, attractiveness ratings for the other items of information were recorded in columns 2 through 11. After the first five questions, the student's cumulative ratings (based on the unscrambled answers to the first five questions taken all together) were recorded in the first asterisked column. The interviewer circled the rating of the occupation the student had designated as the one he would most like to prepare for at this point. Following the same procedure, cumulative ratings for three items of information taken together were also recorded in the asterisked columns following answers to questions 8 and 11. At the end of the game, when all 11 pieces of information had been unscrambled, the student rated each occupation as a whole, and selected the one he would most like to prepare for. This was recorded in the double-asterisked vertical column. Recorded in the row labeled "Q" were the student's ratings of the importance of each question.

The small numbers in the boxes on the top row (123, 132, etc.) told the interviewer how to "scramble" the order of the three occupations in presenting each item of information on the game board. If more than one game was played, the bottom form was used.

FIGURE G

RATING SCALE NO. 2


5 Absolutely Necessary
4 Very Important
3 Important
2 Fairly Important
1 of Minor Importance

ID No. ______

FIGURE H

SOC RECORDING FORM

______ Student's Name ______ Grade/School ______ Interviewer's Name ______ Date

	1 2 3 1	1 3 2 2	2 1 3 3	2 3 1 4	3 2 1 5	*	3 1 2. 6	1 2 3 7	2 3 1 8	*	3 2 1 9	1 3 2 10	2 1 3 11	*	* *
Q															
1															
2															
3															
						*				*					* *
1															
2															
3															

Times: Start____ End Game 1____ End Game 2____ OVERALL GRADE________

COMMENTS: ________

Description of SOC Measures

Scoring procedures, broadly conceived, included the following kinds of measures:

Numeric

(1) Relative Distances - D 2/1, D 3/1

Distances moved in Parts 2 and 3 relative to Part 1 (D 2/1 and D 3/1 respectively)provided indices of how well a student had succeeded in generating the "right questions."

They were defined as:

$$D\ 2/1 = \frac{\sum_{6}^{8} \sum_{1}^{3} \left| O_{ij} - 7 \right|}{\sum_{1}^{5} \sum_{1}^{3} \left| O_{ij} - 7 \right|} \left(16\ 2/3 \right)$$

$$D\ 3/1 = \frac{\sum_{9}^{11} \sum_{1}^{3} \left| O_{ij} - 7 \right|}{\sum_{1}^{5} \sum_{1}^{3} \left| O_{ij} - 7 \right|} \left(16\ 2/3 \right)$$

Where, O_{ij} was the scale position (on the attractiveness scale) of occupation i (i=1, 3) for the jth question (j=1, 11). Scale position distances were accumulated as differences from the midpoint of the scale which is 7.

Movement of the markers in Part 1 gave a measure of the importance to students of the constructs or dimensions that they produce on their own in thinking about an occupational choice. Movement in Part 2 gave a measure of the impact of information that students recognized as important when given constructs or dimensions to choose from. Movement in Part 3 gave a measure of the impact of unsolicited information provided by the interviewer. The ratio of distances moved in Part 2 and 3 relative to Part 1 cancelled out effects of response style (some students tend to make large moves and others small moves). It permitted full focus on students' cognizance of the constructs or dimensions that were indeed important to them in making an occupational choice. Students who knew what was important to them would presumably have asked the "right questions" in Part 1. They were justified in not asking the other questions, should have been relatively unaffected by the unsolicited information, and should have made relatively small moves in Parts 2 and 3. But students who made relatively large moves in Parts 2 and 3 had presumably failed to ask the "right questions" (for them) in Part 1. They had low cognizance of the constructs or dimensions that indeed turn out to have had a big impact on their choices.

(2) Relative Importance of Questions - I 2/1, I 3/1

The ratio of the average importance of questions in Part 2 and Part 3 to the average importance of the questions asked by students in Part 1 provided other indices of how successful students were in generating good questions.

These measures were defined as:

$$I\ 2/1 = \frac{\bar{Q}_2}{\bar{Q}_1}, \quad I\ 3/1 = \frac{\bar{Q}_3}{\bar{Q}_1}$$

Where, $\bar{Q}_1$ was the average scale rating (on importance scale) assigned to questions asked in Part 1, and $\bar{Q}_2$ and $\bar{Q}_3$ were the average scale ratings for questions asked in Parts 2 and 3.

A large value for I 2/1 indicated that a student had failed to ask questions that he could recognize as important. Similarly, a large value for I 3/1 indicated that a student had failed to ask or recognize questions about occupational values that were important to him.

Non-numeric

(1) Consistency of Choice

The consistency of a student's successive choices of occupation at the end of Parts 1, 2, and 3 of the game, gave an overall indication of the impact of information received in response to freely-formed questions, items recognized as important, and unsolicited information about values, respectively.

(2) Desirability of Choice

After playing SOC, students made ratings of the importance of ten occupational values. On the basis of these ratings, it was noted whether a student selected the occupation that had the greatest potential for satisfying his values, weighted according to the importance each student had attributed to them.

(3) Kinds of Questions Asked

Classification of student's questions into such content categories as values, activities, working conditions, etc., provided a means for examining the nature of the constructs he used for occupational decision-making. The description of question content was a potentially useful diagnostic measure and was not intended for evaluation purposes.

Frequency of Selection of Each Occupation in SOC Game, Fall 1974

As indicated in the description of the Fall 1974 version of the SOC game, students were allowed to ask five questions of their own devising at the beginning of the game; they then selected three questions from a display of the full structure of the information; finally, they received three unsolicited items of information. Table III-2 shows the frequency with which the students selected each of the three occupations (constructed from and labeled here for convenience "Retail Store Manager," "Newspaper Reporter," and "X-Ray Technologist") following their first five questions and at the end of the game in their final choice.

"Newspaper Reporter" was the most frequently chosen in both instances for both grades. As a final choice, 57% of the ninth graders, 53% of the twelfth graders, and 55% of the total group selected Newspaper Reporter.

"Retail Store Manager" was the second most frequently selected SOC occupation. 30% of both the ninth and twelfth graders and 31% of the total group chose it at the end of the game.

The least frequently selected occupation was "X-Ray Technologist." It was used as a final choice by 13% of the ninth graders, 17% of the twelfth graders, and 15% of the total group.

By looking at the choices made after the first five questions and at the final choices, one can see the impact of unsolicited information on a few of the students. In every case a few students' minds were changed by what they learned as they played the game. Three more ninth graders were attracted to "Newspaper Reporter" as the game continued. For twelfth graders the reverse was true: three fewer twelfth graders chose "Newspaper Reporter."

Frequency of Selection of Each Occupation Compared With Spring 1974

Table II-2 (see Chapter II, p. 18) shows the selections made by students in the Spring 1974 sample. At that time, "Newspaper Reporter" did not have the universal appeal that it did to the Fall 1974 group. The ninth graders in the Spring of 1974 preferred "Retail Store Manager." As before, however, "X-Ray Technologist" was the least frequently selected.

In the SOC administration of Fall 1974 the facts concerning each occupation were constructed to obtain clearest possible differentiation. This was done to avoid any situation in which the students would receive identical information for two different occupations, since such identities would prevent differentiated reactions.

The effect of this new structuring of the SOC game is visible when one compares these two tables. For example, while "X-Ray Technologist" was the least attractive to both samples, the lower percentages in the Fall 1974 group suggest that the sharper differentiation of information resulted in lowering the desirability of this occupation in the Fall 1974 SOC version. Conversely, the percentages for the more attractive occupations were higher.

TABLE III-2

FREQUENCY OF SELECTION OF EACH OCCUPATION IN SOC GAME, FALL 1974

	"Retail Store Manager"	"Newspaper Reporter"	"X-Ray Technologist"
9th Grade			
After first 5	34% (13)	50% (19)	16% (6)
Final	30% (12)	57% (22)	13% (4)
12th Grade			
After first 5	25% (9)	61% (22)	14% (5)
Final	30% (11)	53% (19)	17% (6)
Total			
After first 5	30% (22)	55% (41)	15% (11)
Final	31% (23)	55% (41)	15% (10)

"Desirability" of Occupations "Chosen"

Table III-3(a) shows, by grade, the percentage of students whose occupational choice at the end of Part 1 (after self-generated questions and before unsolicited information) was an occupation with the highest, second highest, or lowest desirability sum.

In a little over half of the cases (53%), students chose the occupation which had the highest desirability sum. Seniors were slightly more likely (58%) to select an occupation with the highest desirability sum than were freshmen (47%).

Twenty-seven percent of all students selected an occupation with the second highest desirability sum. Seniors did so more often (33%) than did freshmen (21%).

Eighty percent of all students in the sample selected an occupation with either the highest or second highest desirability.

Freshmen were four times as likely (32%) as seniors (8%) to select an occupation with the lowest desirability sum.

Table III-3(b) shows, by grade, the percentage of students whose occupational choice at the end of the game was an occupation with the highest, second highest, or lowest desirability sum. Overall, the percentage of students selecting an occupation with the highest desirability increased from 53% to 59%. Once again seniors were slightly more likely (61%) to select an occupation of highest desirability than were freshmen (58%).

The overall percentage of students selecting an occupation of second highest desirability stayed the same (27%), with the same percentages of seniors (33%) and freshmen (21%) as in Table III-3(a).

At the end of the game, a slightly smaller percentage of all students (14% as opposed to 20% at the end of Part 1) selected an occupation with the lowest desirability sum. While the percentage of seniors selecting an occupation of lowest desirability dropped only two points from the end of Part 1 to the end of Part 3, the percentage of freshmen selecting an occupation of lowest desirability dropped by eleven percentage points.

In general, when we compare Tables III-3(a) and III-3(b) of the Fall 1974 study with corresponding tables in the Spring 1974 study (see p. 20) we see that seniors in the fall study consistently led the freshmen in selecting occupations of highest and second highest desirability, whereas results of the previous spring were mixed, with freshmen leading some of the time. As in the spring study, freshmen again chose the occupation with the lowest desirability sum more frequently than seniors, but we now see a greater percentage doing so (end of Part 1 , 32% compared to 13%; end of game 21% compared to 8%). We still see over half of all students choosing the occupation with the highest desirability sum, but there is a slight decrease in the percentage doing so (end of Part 1 , 53% compared to 62%; end of game 59% compared to 62%).

TABLE III-3(a)

FREQUENCY WITH WHICH OCCUPATIONS AT VARIOUS LEVELS OF DESIRABILITY WERE CHOSEN AT END OF PART 1, FALL 1974

	Highest Desirability	Second Highest Desirability	Lowest Desirability
Grade 9	47% (18)	21% (8)	32% (12)
Grade 12	58% (21)	33% (12)	8% (3)
Grades 9 & 12 Total	53% (39)	27% (20)	20% (15)

TABLE III-3(b)

FREQUENCY WITH WHICH OCCUPATIONS AT VARIOUS LEVELS OF DESIRABILITY WERE CHOSEN AT END OF GAME, FALL 1974

	Highest Desirability	Second Highest Desirability	Lowest Desirability
Grade 9	58% (22)	21% (8)	21% (8)
Grade 12	61% (22)	33% (12)	6% (2)
Grades 9 & 12 Total	59% (44)	27% (20)	14% (10)

Comparing Types of Questions Most Frequently Asked by Ninth and Twelfth Graders

What ninth and twelfth graders construed as important information about occupations was expressed in the questions asked in playing SOC. Frequencies of various constructs or categories of questions are shown in Tables III-4, III-5, and III-6. In the first stage of the game, students asked five spontaneously-initiated questions (Table III-4: Questions 1-5). Next, students were given the opportunity to select three questions from a prepared list (Table III-5: Questions 6-8). Finally, all eight questions were combined in the third table (Table III-6: Questions 1-8). In separate columns for ninth and twelfth graders, all three tables give frequencies, percentages, and rank order of frequencies of the questions asked. By comparing the columns, similarities and differences can be observed in the career concerns of the groups at the two grade levels.

In Table III-4, showing the data on the questions initiated directly by the students, the first six questions were most frequently asked in both groups, although in slightly different rank order. "Field of interest" was the most common concern of seniors, while "salary" ranked first for freshmen; seniors--but not freshmen--ranked "education" ahead of "leisure" and "variety." The differences in percentages, however, were very small. It is clear that questions on the first three topics ("salary," "physical surroundings," "field of interest") were most popular in both groups, with nearly equal frequencies. The next set of three topics ("education," "variety," "leisure") also ran very close in popularity for both groups. But 9th graders asked a noticeably larger number of questions about activities than did the 12th graders, while 12th graders were much more concerned than 9th graders about opportunities for advancement.

Table III-5 shows what questions were selected by students from a list after the first five self-generated questions had been answered. They illustrate the questions students recognized as important even though they had not been mentioned in the free situation. Since none of the first five questions could be repeated, Table III-5 would not be expected to show the same pattern as Table III-4. Indeed, "salary" moved into the lower part of the column (ranking 6.2 for seniors and 8 for freshmen). Clearly, students who regarded salary as important tended to make that concern explicit and frame a question about it. Yet for both groups "field of interest" was still at the top, "variety" was second instead of fourth, and "physical surroundings" third. "Helping others" and "fringe benefits" moved up for freshmen; "fringe benefits," "pressure," and "security" for seniors.

Table III-6, combining the data of Tables III-4 and III-5, should give a more complete picture of students' concerns regardless of whether the questions were constructed or merely selected. It shows that again the first six questions at the top of the list were the same for both age groups although they appeared in slightly different order. Clearly, "field of interest" appeared as the primary interest of both groups, and "physical surroundings" second. After that, the freshmen ranked "salary," "variety," "leisure," "education" in that order, while seniors asked about "variety," "salary," "education," and then "leisure." Even the next two questions, "co-workers" and "helping others," were parallel in rank for both groups before wider differences began to appear.

TABLE III-4

TOPICS OF QUESTIONS 1-5 (SELF-GENERATED) ASKED BY 9TH AND 12TH GRADERS, TABULATED BY FREQUENCY, PERCENTAGE, AND RANK ORDER OF FREQUENCY, FALL 1974

	9th graders (39)*			12th graders (36)*		
	f	%	r	f	%	r
$ Salary	27	14%	1	24	13%	2
Physical Surroundings	26	13%	2	20	11%	3
Field of Interest	24	12%	3	27	15%	1
Leisure	17	9%	4.5	15	8%	5.5
Variety	17	9%	4.5	15	8%	5.5
Education	16	8%	5	18	10%	4
Activities	14	7%	6	3	2%	12.5
Co-Workers	12	6%	7	11	6.1%	6.5
Helping Others	7	4%	8	10	5.5%	7
Independence	6	3%	9.3	6	3.3%	8
Location	6	3%	9.3	2	1.1%	11.2
Dress	6	3%	9.3	2	1.1%	11.2
Fringe Benefits	5	2.5%	10	4	2.2%	9
Security	2	1%	11.2	2	1.1%	11.2
Outlook	2	1%	11.2	3	2%	10.3
Leadership	2	1%	11.2	3	2%	10.5
Pressure	2	1%	11.2	0	0%	
Personal Contact	1	.5%	12.2	2	1.1%	11.2
Advancement	1	.5%	12.2	11	6%	6.5
Prestige	1	.5%	12.2	0		
Danger	1	.5%	12.2	1		12.5
Personal Qualifications	0	0%		1		12.5
Type of Employer	0	0%		0		
Total No. of Questions	195			180		

* In addition to complete data cases, this includes one 9th and two 12th grade students who completed the game but not the interview.

TABLE III-5

TOPICS OF QUESTIONS 6-8 (SELECTED FROM LIST) ASKED BY 9TH AND 12TH GRADERS, TABULATED BY FREQUENCY, PERCENTAGE, AND RANK ORDER OF FREQUENCY, FALL 1974

	9th graders (39)*			12th graders (36)*		
	f	%	r	f	%	r
Field of Interest	28	24%	1	25	23%	1
Variety	12	10%	2	14	13%	2
Physical Surroundings	11	9%	3	12	11%	3
Leisure	9	8%	4.3	6	5.5%	5.3
Helping Others	9	8%	4.3	2	2%	7.2
Fringe Benefits	9	8%	4.3	7	6.4%	4.5
Pressure	6	5%	5	7	6.4%	4.5
Security	5	4%	6	6	5.5%	5.3
Co-workers	4	3.4%	7.5	4	4%	6.2
Danger/Hazards	4	3.4%	7.5	4	4%	6.2
Salary	3	2.5%	8	4	4%	6.2
Education	3	2.5%	8	6	5.5%	5.3
Independence	3	2.5%	8	4	4%	6.2
Leadership	3	2.5%	8	2	2%	7.2
Dress	3	2.5%	8	2	2%	7.2
Prestige	2	1.7%	9	2	2%	7.2
Personal Contact	1	.8%	10	0	0	
Advancement	1	.8%	10	0		
Outlook	1	.8%	10	0		
Activities	0			1	.9%	8
Location	0			0		
Type of Employer	0			0		
Total No. of Questions	117			108		

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*In addition to complete data cases, this includes one 9th and two 12th grade students who completed the game but not the interview.

TABLE III-6

TOPICS OF QUESTIONS 1-8 (SELF-GENERATED AND SELECTED COMBINED) ASKED BY 9TH AND 12THE GRADERS, TABULATED BY FREQUENCY, PERCENTAGE, AND RANK ORDER OF FREQUENCY, FALL 1974

	9th graders (39)*			12th graders (36)*		
	f	%	r	f	%	r
Field of Interest	52	17%	1	52	18%	1
Physical Surroundings	37	12%	2	32	11%	2
Salary	30	10%	3	28	9.7%	4
Variety	29	9%	4	29	10%	3
Leisure	26	8%	5	21	7%	6
Education	19	6%	6	24	8%	5
Co-workers	16	5%	7.5	15	5%	7
Helping Others	16	5%	7.5	12	4%	8
Activities	14	4.4%	8	4	1.3%	14
Fringe Benefits	14	4.4%	8	11	3.8%	9.5
Independence	9	3%	9.5	10	3.4%	10
Dress	9	3%	9.5	4	1.3%	14
Pressure	8	2.5%	10	7	2.4%	12
Security	7	2%	11	8	2.7%	11
Location	6	1.9%	12	2	.6%	16
Leadership	5	1.6%	13	5	2%	13
Outlook	3	.9%	14.5	3	1%	15
Prestige	3	.9%	14.5	2	.6%	16
Personal Contact	2	.6%	15.5	2	.6%	16
Advancement	2	.6%	15.5	11	3.8%	9.5
Type of Employer	0			0		
Personal Qualifications	0			1	.3%	17
Total No. of Questions	312			288		

*In addition to complete data cases, this includes one 9th and two 12th grade students who completed the game but not the interview.

A comparison of the fall results with the Spring 1974 test (see p. 22) shows that, in spite of some changes in game procedure, the topics covered in the questions asked by students were quite similar for both samples.

It was noted that in the Fall 1974 procedures students asked five questions of their own construction. In the spring test, however, students had been permitted to ask as many questions as they wished. This condition produced a difference between age groups in total number of questions asked, a difference not possible in the fall trial. Nevertheless, the proportional frequencies of the topics can be compared across occasions.

In the spring test, the most popular topic was "activities;" in the fall (Table III-6) it was "salary" and "field of interest." However, the difference between "activities" and "field of interest" may be largely a matter of definition of topics and classification of questions. "Activities" and "field of interest" are closely related, and classification of a question as one or the other was sometimes difficult. For example: "Does it involve mechanics?" could be taken as a question about "activities," or it could be taken as a question about "field of interest."

After "activities," however, the next six categories of questions in the spring test are the same as the top six in the fall. Within these six, one difference is the fact that physical surroundings are in second place in the fall list, although ranked only 5 and 7 for 9th and 12th graders in the spring.

The much smaller number of questions about "personal contact" in the fall test probably reflects an attempt on the part of interviewers to probe what students meant by "personal contact." Asked to be more specific, students usually replied with one of two other categories--"helping other people," or simply "working with other people rather than alone" (co-workers). There were still a few questions classified only as "personal contact."

To summarize, then, freshmen and seniors were quite similar in the frequencies with which they asked about various topics, and the same concerns tended to continue uppermost for the separate samples in the two tests.

Means and Intercorrelations of SOC Measures

Means and standard deviations for SOC measures, by grade, are presented in Table III-7. D 2/1 and D 3/1 are relative distance measures, i.e., distances moved in Parts 2 and 3 relative to Part 1; I 2/1 and I 3/1 are the ratios of the average importance of questions (as designated by students) in Part 2 and in Part 3 to the average importance of questions in Part 1. These measures are described in greater detail under the section headed "Description of SOC Measures," p. 48. Note that a score of 10 on the D measures indicates that the average move in Parts 2 or 3 of the game is the same as in Part 1; a score of 10 on the I measures indicates that the average importance attached to questions in Parts 2 and 3 is the same as that attached to questions in Part 1.

As seen in Table III-7, negligible differences were found between the grade samples on all of the SOC measures, and mean scores for both groups tended to fall around 10. The sample variation noted for the measures was encouraging, since it indicated that students differed considerably in the behaviors reflected by the ratio of distances moved in Parts 2 and 3 of SOC relative to Part 1.

Table III-8 gives the intercorrelations between the SOC measures. With the exception of D 3/1 with D 2/1, the correlations are seen to be low--a somewhat surprising finding since the I and D measures are conceptually related. This led us to examine the relationship between the importance ratings students gave questions and the movements made in response to questions (see "Relationship between Importance and Attractiveness," p. 64).

TABLE III-7

MEANS AND STANDARD DEVIATIONS OF SOC MEASURES, FALL 1974

	Grade 9		Grade 12	
	X	S.D.	X	S.D.
D 2/1	10.3	2.9	9.6	2.6
D 3/1	9.2	3.0	9.2	2.6
I 2/1	9.4	2.9	10.4	3.2
I 3/1	11.4	2.7	10.4	3.5

TABLE III-8

INTERCORRELATIONS AMONG SOC MEASURES, FALL 1974

	D 2/1	D 3/1	I 2/1	I 3/1
D 2/1	1.0			
D 3/1	.53	1.0		
I 2/1	.15	.24	1.0	
I 3/1	-.01	-.04	.18	1.0

SOC and Interview Correlations

Correlations between SOC and interview scores are presented in Table III-9. The table shows that none of the correlations were significant--a most disturbing finding since it indicates that the changes made in SOC procedures did not succeed in making scores more congruent with interview scores. Indeed, correlations between the construct scale and the distance measures computed in the Spring 1974 test (r = .37 for DIST 1 and -.40 for DIST 3) decreased to near zero for the corresponding distance measures used in the Fall 1974 test (r = .03 for D 2/1 and -.01 for D 3/1). These findings led us to probe more deeply into the assumptions underlying the model for SOC procedures and scores and to devise tests for some of these assumptions.

TABLE III-9

CORRELATIONS BETWEEN SOC AND INTERVIEW, FALL 1974

(9th and 12th grades combined)

	D 2/1	D 3/1	I 2/1	I 3/1
Constructs	-.03	-.01	-.07	-.26
Information	-.15	-.11	.07	-.02
Reality	-.06	-.03	.05	-.16
Planning	-.08	.02	.12	-.06
Control	-.07	.03	.10	.04
Awareness	-.09	-.07	.00	-.09

The SOC Model

It will be recalled that the original procedure for SOC gave students successive items of information associated with each of the three occupations. Students indicated their reaction (in terms of attractiveness of the occupations) *after receiving each item of information.* But we had no clear way of determining the extent to which the reaction to the nth item represented the impact of that item alone or the accumulated effect of n-1, n-2, etc. In other words, there was no way of distinguishing and controlling for the effect of each item vis-a-vis the interaction effects accumulated across successive items of information.

In brief, the Fall 1974 revision was undertaken to dissociate each bit of information initially from the occupation and thus from the cumulative information about that occupation. The student's reaction to that item would be independent of his reactions to previous items of information and the impact of that item could be registered as if it were the only item of information the student had. Then, at a later point, the various items of information were grouped by occupation, and the student could determine the attractiveness of each occupation in terms of all the information available.

Since this procedure allowed us to isolate the effect of each item and the cumulative (presumably interacting) effect of all items, we expected to be in a position to test hypotheses about the models of decision-making that students used. For example, one important question was whether the data supported a linear model. That is, could the final positions of the three occupations on the scale of attractiveness be predicted by a simple summation of the positions after each item of information treated independently? Or, in more general terms, was there any function of the independently determined effects that could represent or predict the final scale positions?

To examine these questions, a regression analysis was run for the data, later to be followed by test for linearity [Hald, 1952, p. 534]. A separate analysis was run for each occupation.

Since the items of information that a student responded to were distinguishable only by position (i.e., question one for a student may have been about "salary," "leisure," or any other factor), the first five scale ratings were summed. Since it was of no consequence for testing the hypothesis of linearity which variable was considered as independent or dependent, the summed ratings were used as the dependent variable and the cumulative ratings made after the first five questions as the independent variable to make the actual test easier. These results are presented in Table III-10.

TABLE III-10

PREDICTORS OF FINAL SCALE POSITIONS

	Reg. Weight	Intercept	Correlation
Retail Store Manager	.16	1.51	.49
Newspaper Reporter	.18	1.55	.53
X-Ray Technician	.15	1.59	.55

It is worth noting that the size of the correlation found indicated that in playing SOC, students were behaving in a thoughtful manner. This was encouraging since procedures and directions for SOC had obviously become quite complex in this version and we were concerned about students' understanding of the conditions, the tasks, and the scales.

Results from a test for linearity indicated that the linear model was not inappropriate (F value less than 1). The ANOVA table for Newspaper Reporter is presented below.

TABLE III-11

ANOVA TABLE - NEWSPAPER REPORTER

Source	SS	DF	MS
α	134,832	1	134,832
B	1,483	1	1,483
Non-Linearity	602	11	54.7
Error	14,975	62	241.5
TOTAL	151,892	75	

Following this, another regression analysis was run in which the five position points (a position point corresponds to a question asked by a student) were used as independent variables and the cumulative rating was the dependent variable. A test of significance indicated that the beta weights were not affected by position. In other words, maintaining information about position did not seem to significantly increase prediction levels. Further, the analysis failed to shed light on the nature of the relationships between position and information processing. For occupation one, questions asked in positions 4 and 2 accounted for most of the predictive variance while questions asked in position 5 for occupation two and positions 4 and 3 for occupation three accounted for most of the variance. The only consistent finding across the three occupations was that the first question asked by students was the least important in accounting for a student's overall final evaluation of an occupation.

An attempt was made to get at the relationship between the impact of different kinds of content of information and final ratings. Two questions, "salary" and "leisure," were identified as being asked by sizeable numbers of students. Correlations between distance moved after receiving information about "salary" and "leisure" and final ratings are presented in Table III-12. Since information level was tied to content and not occupation (e.g., Retail Store Manager was high on "salary" and low on "leisure"), the table is presented for information levels rather than occupations.

TABLE III-12

CORRELATIONS BETWEEN DISTANCE MOVED AND FINAL RATING BY CONTENT OF QUESTION AND LEVEL OF INFORMATION RECEIVED

Content of Question	Level of Information		
	Low	Medium	High
Salary	.37	.07	.26
Leisure	.20	.31	.15

As would be expected, when the level of information about salary was high or low, distance moved was seen to have a relatively high correlation with a student's final rating; that is, the impact of high or low salary on final rating was much greater than the impact of medium salary. Conversely, a medium amount of leisure resulted in a move that was more highly correlated with final rating than either high or low leisure.

From these data, and other observations, we can reasonably infer that students tended to rate occupations with high salaries favorably and occupations with low salaries unfavorably, while a medium amount of leisure was perceived as more favorable than a high or low amount.

This finding points up a problem of which we became aware somewhat belatedly. While some dimensions of occupational characteristics clearly "scale" (e.g., in the sense that more money was generally preferable to less), others do not. For instance, a medium level of leisure or of responsibility may strike many students as more desirable than either high or low levels, which may be perceived as equally undesirable. In other words, there are different points of view: when a student asks a question about leisure or responsibility, we do not immediately know whether a high, medium, or low level is preferred. It was an attempt to resolve this problem that led us, in the next version of SOC, to have students make "specifications," stating what was desirable, rather than to have them merely ask questions.

Relationship between Importance and Attractiveness

To make a fundamental test of the logical consistency of students' behavior on SOC, we computed correlations between two sets of variables that should be significantly related in rational decision-making. One variable for each student was the difference between highest and lowest position on the attractiveness scale assigned after each independent item of information. The other variable was the weight that the student assigned to each question to indicate its importance to him. These weights were assigned on a scale running from 1 (of minor importance) to 5 (absolutely necessary), to each of the 11 "questions"--five generated by the student, 3 selected by him from a display of the categories, and 3 chosen by the interviewer as a basis for providing unsolicited information.

If the data for each item tended toward an attractive extreme for one occupation and an unattractive extreme for another (as intended), then the difference between highest and lowest scale position should have been a direct function of the importance attributed to the question. Hence, for each student who responded in a logically consistent way, the two should have been substantially correlated.

The average correlation (using an r to z transformation) was .11 for the grade 9 sample and .28 for the grade 12 sample. Reasoning that students might use the attractiveness scale in some non-linear manner--in particular, that they found it harder to move as they went from the midpoint of the scale--scale positions were squared and correlations recomputed using differences between the maximum position squared and the minimum position squared. This transformation of the data had little effect on the average correlations (average correlations = .16 and .29, respectively). Similar correlations were also found when, in place of the difference between high and low scale positions, the total distance moved in response to a question was used (average correlation = .05 and .12 respectively). (Total distance refers to the sum of scale positions across the three SOC occupations.)

We would hypothesize that the students with high positive correlations were behaving in a logically consistent way and were good candidates to be labeled competent decision-makers, while the others--the majority--were not competent decision-makers. Thus, some variation of these correlations between weights and moves for the various questions might well be treated as scores. They indicate the extent to which a student uses an item of information about occupations in a way that is consistent with his values--i.e., the importance he attaches to the dimension of information represented by that item. Indeed, a score based on this relationship appears in the next version of SOC.

Interview Schedule

The version of the interview used in Fall 1974 appears as Appendices E & F. Appendix G is the manual describing the scales and procedures for administration and scoring.

Characteristics of the Interview Scales

Means and standard deviations for ninth- and twelfth-grade samples on the six interview measures are presented in Table III-13. Notwithstanding revisions in the interview, these findings paralleled the earlier ones. As before, the mean scores for twelfth graders were higher on all measures with the difference between the groups reaching significance for three scales--Constructs, Information, and Planning.

TABLE III-13

MEANS AND STANDARD DEVIATIONS FOR INTERVIEW SCALES, FALL 1974

	Grade 9		Grade 12	
	X	S.D.	X	S.D.
** Constructs	13.4	5.2	17.3	4.8
** Information	18.6	5.5	21.2	5.9
Reality	4.9	2.4	5.5	2.8
** Planning	8.9	3.5	11.5	2.5
Control	3.1	1.0	3.5	.9
Awareness	17.4	3.8	18.0	5.4

** $p < .01$

The intercorrelations between the six interview scales, based on Fall 1974 data, appear in Table III-14. While the correlations were generally moderate, they were higher than those obtained in the previous field test (see Table II-9, p. 29). Apparently, revisions in the interview increased the overlap between scales. The Awareness scale in particular shows a great deal of overlap with four of the other scales (Constructs, Information, Reality, and Planning).

TABLE III-14

INTERCORRELATIONS BETWEEN INTERVIEW SCALES, FALL 1974
(Grades 9 & 12 combined)

	Constructs	Information	Reality	Planning	Control	Awareness
Constructs	1.000					
Information	.39	1.000				
Reality	.36	.46	1.000			
Planning	.40	.44	.50	1.000		
Control	.11	.24	.24	.34	1.000	
Awareness	.46	.56	.58	.68	.16	1.000

Correlations were also computed between the six interview scales and the items comprising these scales. The results are presented in Table III-15. As indicated in the table, the correlation between each item and the scale to which it belongs was computed with that item omitted from the scale.

As would be expected, correlations between items and the scales which they comprised were generally moderate. The only scale for which correlations exceeded the .50's was the Awareness scale, with which three items had intercorrelations in the .60's.

Comparing an item's correlation with its own scale to its correlations with the other five scales gave an indication of whether or not the item was correctly placed. In general, items appeared to be on the correct scale. There were, however, some exceptions.

Constructs scale. Several items on this scale were examined more closely:

> Item 1: "Just about everybody works. But not everyone hopes to get the same rewards from work. What are some of the rewards, satisfactions, (and so on) that you think people would like to get from working? Why do people work?"

This item had the highest correlation with the Awareness scale (.34) and a relatively low correlation with its own scale (.20). Since the Awareness scale had considerable overlap with the Constructs scale (and, indeed, with all the other scales, except Control), this finding was not unexpected. Further, since the item served as a warm-up and was intended to introduce the subject of career decision-making, it was not surprising that students who were high in "Awareness" were more likely to be ready to respond to a question of this sort.

> Item 3: "What might you not like about being a __________? (List all the things you can think of that you might dislike about it.)"

This item correlated highest with the Planning scale (.36). However, since it had a moderate correlation (.25) with its own scale and was actually a companion question to Item 2 (one asked for "likes" and the other for "dislikes"), it did appear to be correctly placed.

> Item 22 (Information Test: Part A): "Name an occupation similar to the one you are presently considering. Write three kinds of rewards or satisfactions that you could get from both your first-choice occupation and the one you just named."

Although this item had a moderate correlation with its own scale (.25), it had the highest correlation with Planning (.32). This was not surprising, since the question dealt both with constructs (listing rewards and satisfactions) and with planning (consideration of a second-choice occupation). It could be included in either of these scales.

Information scale. Unfortunately, the 21-item written questionnaire (Part A) was scored as a whole, making item-to-scale correlations misleading. In examining the two items from the oral interview which have been scored separately (5b and 11), it did seem that Item 5b, which dealt with sources of information actually used and had high correlations with the Reality, Planning, and Awareness scales, should be eliminated.

Planning scale. As already discussed, there was a great deal of overlap between this scale and the Awareness scale. Three of the six items comprising the scale had correlations with Awareness which were as high as or higher than the correlations with their own scale.

Awareness scale. As mentioned, the Awareness scale had high correlations with four of the five remaining scales. The pattern of correlations indicated which items accounted for the dependencies. Since the Awareness scale seemed to add little that was not already covered by the other scales, it might be best to relocate items for this scale in accordance with items-to-other scale correlations and eliminate it as a separate measure.

An alternative would be to retain the Awareness scale using Items 18, 19, and 21. These three items had the highest item-to-scale correlations (.63, .61, and .65 respectively) and had relatively moderate correlations with each other. The remaining five items on the Awareness scale could be moved to those scales with which they had the highest correlations.

Revision of Interview Schedule

The interview schedule has been revised since the Fall 1974 administration, even though it was not used in the Spring 1975 field test. The findings outlined in the previous section were taken into account in refining this instrument. (Prospective users are advised to communicate with the authors to get copies of the most recent version of the Interview and Manual.)

TABLE III-15

CORRELATIONS BETWEEN INTERVIEW SCALES AND ITEMS COMPRISING THE SCALES, FALL 1974*

Scale	Item	Const.	Info.	Real.	Plan.	Cont.	Aware
Const.	1	.20	.28	.09	.15	.09	.34
	2	.39	.20	.35	.09	-.03	.13
	3	.25	.17	.27	.36	.13	.28
	8	.40	.31	.14	.23	.10	.23
	9	.41	.25	.14	.31	.21	.35
	16	.51	.24	.14	.21	.00	.33
	22	.25	.13	.28	.32	.06	.22
Info.	5b	.30	.17	.48	.40	.20	.46
	11	.23	.21	.24	.24	-.07	.32
	1-21	.36	.22	.41	.40	.24	.50
Real.	6	.39	.41	.43	.43	.31	.45
	12	.25	.38	.43	.41	.13	.52
Plan.	7	.24	.00	.07	.28	.18	.29
	10	.33	.42	.49	.47	.24	.47
	13	.15	.16	.21	.40	.18	.12
	14	.44	.38	.40	.37	.29	.47
	17	.21	.28	.34	.35	.15	.61
	8-11	.17	.37	.26	.47	.44	.29
Cont.	12-16	.12	.24	.24	.34	--	.16
Aware	5a	.22	.32	.47	.45	.06	.46
	15a	.37	.23	.34	.26	.09	.30
	15b	.41	.46	.45	.47	.12	.49
	7	.32	.43	.35	.27	.04	.39
	18	.32	.37	.29	.40	.18	.63
	19	.27	.33	.33	.59	.03	.61
	20	.16	.27	.29	.37	.03	.39
	21	.18	.33	.39	.54	.20	.65

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* Correlations were computed between each item and the scale to which it belongs with the item omitted.

Summary of Findings from Fall 1974

Major findings are summarized below:

- Relationships between SOC scores and other putative criteria were low. The significant correlation that was observed in the past between the distance measure of SOC and the constructs scale of the interview diminished without an accompanying increased relationship observed between any of the other SOC scores and interview measures. (See "SOC and Interview Correlations," p. 60.) These findings can be interpreted in any or all of various ways: the criteria may have been inadequate; the SOC procedures or scores may have failed in their purposes; SOC and the interview may have tapped different components of competence in CDM.

- We failed to find a significant relationship between the importance students attached to questions they asked and their movements on the attractiveness scale. (See "Relationship between Importance and Attractiveness," p. 64.) Since much of the scoring of SOC was predicated on the assumption that such a relationship should accompany competence in CDM, this finding needed further examination before another version of SOC could be developed.

- The data we collected also allowed us to examine the manner in which students combine information. Findings indicated that students were not behaving in some random manner but rather that they were giving thought to the task.(See "The SOC Model," p. 61.) Interviewers concurred and reported that students seemed interested and involved in the game.

- Many of the student behaviors elicited in playing SOC remained quite stable across the various versions we tried. These included the kinds of questions asked by students, the relative popularity of the occupational alternatives, both in terms of their selection by students and in computed desirabilities, the high student involvement in the task, and, to our chagrin, the idiosyncratic use of the attractiveness scale.

In-Depth Interviews

These interpretations of our findings from the Fall 1974 version of SOC indicated the need for further study of students' understanding of the task, students' use of the attractiveness scale, and the nature of SOC information. All of these topics were explored through in-depth interviews with students after the fall study was completed.

Out of these in-depth interviews came a new version of SOC which was field-tested in the Spring of 1975. Highlights of these revisions follow.

Revisions Based on Findings from In-Depth Student Interviews

The prepared SOC information in the Fall 1974 version which was based on real occupations did not mean the same thing to all students. For example, an annual income of $15,000 seemed high to some students and low to others. Rather than supply real information in response to questions, the Spring 1975 version had students specify what they wanted (e.g., income) and how much they wanted compared to most people in the future (e.g., average). The information they got gave the likelihood of satisfying their specification in each occupation. In this way the occupations were clearly differentiated along meaningful dimensions in terms of the student's own specifications.

Asking students to specify what they wanted in an occupation also solved the problem of students who found a medium amount of a characteristic to be most desirable (e.g., average amount of leadership/responsibility). In the previous version they received three pieces of information indicating high, medium, and low leadership/responsibility respectively for the three occupations. Because they wanted an average amount, they would have moved up the scale in response to an answer designed to be neutral. In the Spring 1975 version, students specified a medium amount of the characteristic in the first place and the neutral answer, "possible" produced a neutral response, while "very likely" elicited a positive response. Responses of "possible" and "very unlikely" were defined to suggest that opportunities are less than what was specified, never more.

When students were instructed to ask questions about the occupations rather than formulate specifications for what they wanted in an occupation, they sometimes asked questions with no ideal answer in mind. This resulted in arbitrary use of the attractiveness scale. Because students could not make specifications without stating an ideal level or amount in the Spring 1975 version, their responses to information were less arbitrary.

In the past, the extremes of the attractivenss scale were anchored by absolutes like "the greatest" or "the worst." This contributed to a ceiling effect--students made smaller moves as they approached these absolutes. The new scale used the relative terms, "better" and "worse."

Complete freedom of movement of the markers also produced a ceiling effect. Usually the first information produced big moves and subsequent information produced smaller moves as the extremes of the scale were approached. It was decided that movement of the markers after the response to any one specification should be restricted to a maximum of three points up or down the scale so that the impact of later information could be just as visible as the impact of the first information. Given the mix of information, it was impossible for a student to reach the extremes of the scale until unrestricted movement was allowed at the end of each phase in Part 1 of the Spring 1975 version.

It was found that using real occupations, even with scrambled information, encouraged guessing and thus distracted from the decision-making process. The new version used occupations of the future, and prevented assumptions about combinations of qualities in any occupation. Overall desirability of the occupation was determined by the desirability sum, not by the name of the occupation. Computation of the desirability sum focused attention on the decision-making process.

It was found that definitions of characteristics used in the previous version of SOC were confusing, particularly those of "interest field" and "education." Wording of the descriptive cards was revised to make the definitions clear and neutral.

The complexity of procedures used in the Fall 1974 version of SOC and the time required to administer the instrument called for simplification and abbreviation. A number of revisions were designed to reduce total administration time to no more than 40 minutes per student and to insure that all students understood clearly what they were doing.

A full description of the revised SOC Game follows under "SOC Procedures, Spring 1975," p. 80.

A sample write-up of one of the in-depth student interviews is included as Exhibit III-1.*

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* Exhibits are included at the end of the chapter.

EXHIBIT III-1

SAMPLE WRITE-UP OF IN-DEPTH INTERVIEW WITH STUDENT

Student:	M.B., 18 years old, attended high school, no diploma
Purpose:	Further examination of nature of SOC information and use of scale
Hypothesis:	A student who is a good career-decision maker will ask questions related to the 10 SIGI values. When he is given unsolicited information about the values which were not covered in his questions, he will not change his ratings of the occupations. If his ratings do change, this is an indication that he did not ask the "right" questions (for him) in the first place and that he is, to some degree, a poor decision-maker.

Procedure

Introduction. Put the student at ease. Find out where he is in school. Explain the game involves career decision-making and the data will not be used. Ask what student's first and second choice occupation might be.

Part I. Student is shown the game board and told there are three careers. He is to ask questions to determine which career is best for him. He may ask as many questions as he wishes. He is given answers from SOC information or from the interviewer for each question and the information accumulates on the game board for the three occupations.

Part II. The student helps to label a 7-point scale to be used in rating the occupations. The interviewer asks questions to help the student label the points on the scale such as, "If you saw the best possible career, what would you call it?" To make sure that the student's labels are workable for him and that the extremes have the potential of being used, the student is asked to name an occupation which corresponds to each point on the scale. He is then told to look at all the information on the game board and rate the three occupations, using his scale.

Part III. The interviewer gives the student unsolicited information about two of the three occupations, those that received the highest and lowest ratings. The information corresponds to any of ten specified values which were not covered in the student's questions. The student is asked, "Suppose I told you this about the occupations, how would you rate them now?" The interviewer puts a favorable answer with the lowest rated occupation and an unfavorable answer with the highest rated occupation. The student is then told to forget that information and to suppose he were given information about another value. He has the chance to change his ratings after each category of unsolicited information is revealed. When this is completed, the student is told the names of the three occupations.

Part IV. Next the student is asked to rate the impact that the solicited information had on him. First the interviewer helps him to label a 7-point scale and then each answer is rated.

EXHIBIT III-1 (cont.)

Part V. Using a prepared 5-point scale, the student is asked to rate his self-generated questions in terms of their importance as he now sees it.

Part VI. The student reads and completes the SOC Values Rating Sheet (attached).

M.B.'s Performance

Introduction. M.B. is 18 years old. He plays guitar with a jazz group and is looking for a steady, daytime job. His first choice career is music; second choice, art.

Part I. M.B. asked ten questions, abbreviated as follows:

1. Manual (designing something with one's hands)
2. Technical Knowledge Required
3. Co-workers
4. See End Product
5. Meet People
6. Use of Equipment
7. Hazards
8. Indoors/Outdoors
9. Independence
10. Unionized

Part II. M.B. created the following scale to rate the three occupations:

musician	+3	moving
newspaper reporter	+2	exciting
fiction writer	+1	decent
mathematician	0	so-so
teacher	-1	boring
bank teller	-2	predictable
janitor	-3	unchanging

To the left are names of occupations which M.B. felt corresponded to the scale positions. The three occupations were rated as follows:

Occupation	Rating
#1	+1
#2	-1
#3	0

EXHIBIT III-1 (cont.)

Part III. Because occupation #3 was rated between #1 and #2, it was dropped from this part of the game. The following table shows the unsolicited SIGI values, the new ratings assigned for occupations 1 and 2, and the difference between the new and original ratings.

Unsolicited Values	Occupation	New Rating	Change from Old Rating	
Income	#1	0	1	= 2
	#2	0	1	
Prestige	#1	+1	0	= 0
	#2	-1	0	
Helping Others	#1	0	1	= 4
	#2	+2	3	
Security	#1	+1	0	= 0
	#2	-1	0	
Leadership	#1	+1	0	= 0
	#2	-1	0	
Education	#1	0	1	= 4
	#2	+2	3	
Leisure	#1	-2	3	= 6
	#2	+2	3	

The information which elicited the greatest rating changes concerned Leisure (6), Helping Others (4), and Education (4). Income (2) had some impact as well, but the other values resulted in no rating change, and were therefore assumed to be unimportant to M.B.

The information for security should not have been given as unsolicited information, since M.B. had already asked about unions.

Part IV. M.B. was asked to rate the impact of the answers to his 10 original questions on the following scale which he helped to create:

3	best
2	(very good)
1	(good)
0	no impact
-1	(poor)
-2	(very poor)
-3	worst

EXHIBIT III-1 (cont.)

The descriptors in parentheses were included at first, but later deleted when M.B. began to rate how much information he had received instead of its impact. The discrepancy was detected when he rated a "Yes" and "No" response the same way. It was felt that the deleted words had changed the focus of the scale.

The table below shows the impact scores by question and occupation.

Question	Occupation #	Rating
Manual	1	0
	2	0
	3	0
Tech Know	1	0
	2	0
	3	+1
Co-Workers	1	-1
	2	0
	3	0
See end prod	1	+2
	2	0
	3	0
Meet people	1	+2
	2	0
	3	0
Use of equip	1	0
	2	+1
	3	+2
Hazards	1	0
	2	-1
	3	-3
In/Out	1	+1
	2	0
	3	0
Independence	1	+1
	2	+2
	3	-1
Unionized	1	+2
	2	0
	3	-2

EXHIBIT III-1 (cont.)

The answers for "manual" had no impact. M.B. indicated that "no manual labor, lots of writing" would have been a good answer. He could not think of a good answer for "co-workers." In the first case he was expecting an answer to a broader question than he asked, namely skills or abilities required. In the second case he seemed to be on a fishing expedition, with no expectations.

Part V. M.B. rated the importance of his questions on the following scale, prepared in advance:

5 Absolutely Necessary
4 Very Important
3 Important
2 Fairly Important
1 Of Minor Importance

The Importance Ratings for the self-generated questions are shown below.

Question	Importance Rating
Co-Workers	4
See End Product	4
Hazards	4
Unionized	4
Technical Knowledge Required	3
Meet People	3
In/Out	3
Independence	3
Equipment	2
Manual	1

Part VI. Listed below are the final ratings that M.B. assigned to the 10 SIGI values on the Values Rating Sheet and the net change in M.B.'s original occupational ratings produced by unsolicited values information in Part III. Where hyphens appear, information was not given in Part III.

EXHIBIT III-1 (cont.)

Value	Rating	Net Change Produced by Values Info, Part III
High Income	5	2
Prestige	1	0
Independence	4	-
Helping Others	8	4
Security	2	0
Variety	5	-
Leadership	1	0
Interest Field	4	-
Leisure	7	6
Early Entry	3	4

We can see from this comparison that M.B. was consistent in his ratings. The values which received high ratings produced some change in Part III, while the low-rated values produced no change in Part III.

Comments. When a student asks a multiple-part question at the beginning of the game, as M.B. did, it might be wise to write down the separate questions and tell the student that he can return to the others if he wishes. Otherwise the questions may be forgotten or thought unworthy by the student.

Words assigned to a scale have a large impact on its use by the student, as seen in Part IV.

For the most part, M.B. was consistent in his ratings as seen in Part VI.

CHAPTER IV

FIELD TEST 3 (SPRING 1975)

The original goal for the second year of the SOC study had been to validate SOC by means of a structured interview. After questioning students prior to the Spring 1975 study, we realized that a less ambitious goal was in order. Procedures had to be refined to make SOC easier and quicker to administer before its validity could be tested. It was also necessary to develop more specific operational descriptions of a good career decision-maker before taking steps to validate those measures. Finally, scores that could have diagnostic meaning had to be developed. In order to devote all remaining time to those primary purposes, the structured interview was deleted from the Spring 1975 field test.

Forty minutes of each student's time were required for the SOC administration. Time was allowed at the end of that period for feedback and discussion.

Description of Sample

One of the 3 high schools in the previous sample participated in the Spring 1975 field trial of SOC. One week before the trial began, two interviewers went to the school to talk to the students. Heterogeneous 9th and 12th grade classes were selected as the target groups. Each grade was divided into experimentals and controls.

The 9th and 12th grade control groups were told briefly about the game and were given parental permission forms with accompanying letters. The experimental groups from both grades were told about the game in more detail and participated in a 20-minute discussion of occupational characteristics. They too were given permission forms. Seniors over 18 signed for themselves. (See Exhibits IV-1 and IV-2* for outlines of presentations to both groups and for the letter to parents.)

Students returned permission forms to the school and were contacted at random. Final selection was made on the basis of their availability. Of approximately 375 students who received letters, 104 returned permission forms. Of these, 60 actually played the SOC Game, 15 in each group. Table IV-1 shows the number of students in each group who agreed to participate and the number by sex who actually participated in the study.

Standardized test scores of all participating students were reviewed. There were no differences between 9th and 12th graders (relative to appropriate grade norms) or between experimental and controls as measured by standardized tests of verbal ability ($p > .05$).

All students were administered the same version of SOC as described in the following section. The purpose of dividing them into experimental and control groups was to see whether a very brief "coaching for the test" would

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* Exhibits are included at the end of the chapter.

TABLE IV-1

DESCRIPTION OF SAMPLE, SPRING 1975

	EXPERIMENTAL						CONTROL					
	9th			12th			9th			12th		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
No. Agreed			25			40			21			18
No. Completed	7	8	15	9	6	15	8	7	15	5	10	15

make a difference in performance. We had wondered whether students were unduly hampered by being asked to formulate specifications on the spot, within ten minutes. Could they be expected to handle this assignment as well as if they had been given advance notice and an opportunity to deliberate on the task at their leisure?

Findings showed no marked differences between experimentals and controls on any dimension measured. On the average, both groups named the same number of specifications, indicating that the ten-minute time restriction did not hamper student performance. It should be noted, however, that the amount of intervention with the experimentals was minimal, because of time restrictions at the school. Given the short and informal nature of the intervention and the apparent lack of student involvement and preparation, the similarity between the two groups was not surprising. The possible effects of a stronger or more extensive intervention are not to be inferred from this experiment.

SOC Procedures, Spring 1975

Interviewers administered SOC to students individually. Each student had 40 minutes to complete the game.

Introduction

The student was told that he was about to play a game designed to test how good he was in making career decisions.

In this game, the student had to choose which one of three occupations was best for him and decide which one was worst. The three occupations, X, Y, and Z, were occupations of the future rather than present-day occupations. This discouraged students from guessing the names of the occupations and from assuming that certain characteristics went together.

The student had to specify what he wanted in order to get information that would help him select the best and avoid the worst occupation. He was told to specify the things that were most important to him in choosing an occupation--not a particular job in the occupation, but the occupation as a whole.*

In order to illustrate what was expected, the interviewer asked the student to make specifications about the kind of car he would like. Examples of specifications were given by the interviewer if necessary. Also, the student was shown a sample information strip similar to the one he would see later.

The student was then given a few minutes to write his occupational specifications.

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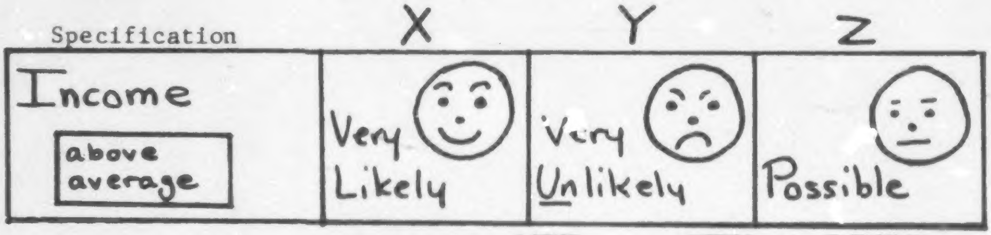
[*] Occupations name broad categories of workers such as bank tellers, physicians, welders, models, or newspaper reporters. Within each occupation there are thousands of jobs. For example, a welder may have a job in a shipyard or a factory or he may be self-employed and have his own shop. We were not concerned with particular jobs in this game. Instead we were talking about occupations as a whole--all bank tellers, physicians, welders, etc.

Part I--Choosing an Occupation

Phase 1. The student made his first specification and was given an information strip containing the specification and information for all three occupations.



("Very likely" was colored green, and "very unlikely" was colored red.)

The information strips were prepared in advance. Favorable, unfavorable, and neutral information were spiraled so that the student would get a combination of responses for each occupation. The purpose was to simulate real-life choices wherein one value was pitted against another. The specification area on some strips was blank so that the interviewer could write a specification in the student's own words when necessary. On the strip shown above, "Income" appeared on the prepared strip but the words, "above average" were written in by the interviewer in accordance with the student's specification. If the student had specified average income, the word, "average" would have appeared instead.

The student was given a scale on which to record how he felt about the three occupations on the basis of the information received. Each occupation had its own scale and marker. The scales ran from +15 to -15, with 0 as the point of indifference. Everything above 0 was better than indifferent and everything below was worse. (See Exhibit IV-3)

The markers were placed at zero initially. The student could not move the markers more than three points up or down the scale in any one move. This prevented him from reaching the top or bottom of the scale before all the information was revealed. The student made his first ratings, which the interviewer recorded, and he then made a second specification.

The information strip for each new specification was placed on top of the previous strip. The student rated each information strip separately and the interviewer recorded all scale positions.

The student was allowed 10 minutes from the beginning of Phase 1 to make specifications, get information, and use the scales. If the student's specifications were unclear, the interviewer probed to find out exactly what the student had in mind.

When the student exhausted his specifications or when time ran out, the strips were spread out so the student saw them all at once. He was told to make an overall rating to show how attractive or unattractive he found each occupation. This time he could use the whole scale for the rating; he was not restricted to moves of 3 or less. At the end of Phase 1, the information strips were removed and the markers were returned to zero.

Phase 2. The interviewer gave the student an opportunity to select additional characteristics, extrinsic rewards and intrinsic satisfactions of the occupations. The student looked over descriptive cards which had names of characteristics on one side and definitions on the other. (See Exhibit IV-4.) The number of cards depended on the number of characteristics previously specified; cards relating to those characteristics were not included. The student selected the three characteristics which he felt were most important for him to know about.

Information strips for each characteristic were given as they were in Phase 1; each new strip was placed on top of the old one. The student was again told to place markers on the scales with the restriction of no more than 3 points per move.

At the end of Phase 2, the three strips were shown together and the student made an overall rating, using the whole scale as he did at the end of Phase 1. The markers were then returned to zero.

Next, the student was shown all the information from Phases 1 and 2 at the same time. He was asked to make a final, overall rating based on all the information he then had. Again, he could use the whole scale. (See Exhibit IV-5 for example of information which a student might see.)

Part II--Evaluation of Decision

Phase 1. The student was told that his choices would now be evaluated. He was given descriptive cards which corresponded to all of the specifications that he initiated in Phase 1, plus the three characteristics that he selected in Phase 2 of Part I. In addition he was given any remaining cards which described extrinsic rewards and intrinsic satisfactions of occupations. (There were nine such cards.)

The student was asked to sort the cards into three piles according to how important it was for him to have a satisfactory amount or level of each characteristic. One pile was for characteristics that were very important to satisfy, one for those that were less important, and one for those that were least important.

The student then sorted the cards into pockets on a scale from 0 to 8. (See Exhibit IV-6.) He could have no more than two cards in pocket 8. The The weights which the student assigned to the characteristic in this way were recorded.

Phase 2. The student's occupational choice was evaluated. First the Desirability Sum Worksheet (Exhibit IV-7) was used to compute relative desirabilities of the occupations.

The weight which was assigned by the student to show the importance of each characteristic was multiplied by the instrumentality of the information, scaled as follows: very likely = 3, possible = 2, very unlikely = 1. The products were added. The sum of the products, called a desirability sum, was obtained for each occupation at different stages in the game. Characteristics describing rewards and satisfactions which were sorted on the importance scale but were not part of the information seen by the student were listed under "other characteristics." They were used in computing an ideal desirability sum, i.e., the desirability of an occupation if all information about rewards and satisfactions had been known. Characteristics weighted less than 4 ("moderate importance")were not used in computing desirability sums.

The desirability sums were entered on the SOC Recording Form (Exhibit IV-8). The interviewer compared the desirability sum with the student's ratings of occupations at each stage. (For a complete description of the use of recording forms, see the next section entitled "SOC Materials.")

The interviewer also pointed out the student's strengths and weaknesses in processing information. He noted the number of specifications made by the student. The number ranged from a low of 2 to a high of 6, in the time allowed. (Students who made many specifications generally had a clearer picture of what they wanted in an occupation than students who made fewer specifications.)

The interviewer also looked at the weights which the student had assigned to different characteristics to see whether the student knew what was important to him in an occupation before the game began. Ideally the student's specifications are weighted most heavily, followed by the characteristics chosen in Part I, Phase 2. The unchosen characteristics should receive the lowest weights. Deviations from this pattern were discussed by interviewer and student.

The interviewer also pointed out that students should logically move the markers in a way that is consistent with the weights they have assigned to a given characteristic. That is, the distance between the marker positions for the occupation that is "very likely" and the one that is "very unlikely" should vary directly with the weight of the characteristic.

After receiving feedback on his performance, the student had a chance to make comments and ask questions about the game.

SOC Materials

The game materials included: (1) descriptive cards, (2) display label and information strips, (3) two rating scales, (4) recording forms, (5) SOC script, and (6) guidelines for administering SOC.

Descriptive Cards (Exhibit IV-4). Cards describing rewards and satisfactions, required abilities, and certain working conditions were used by students in assigning weights to characteristics. The cards describing rewards and satisfactions were also used for presentation of unsolicited information. Each 3" x 5" card had the name of a characteristic on one side and a definition on the other.

Rewards and satisfactions had been identified in previous research [Norris & Katz, 1970]. Abilities were included because students sometimes specified abilities required as well as interest field in Phase 1. Two working conditions were included as well, since they too were sometimes specified. While most working conditions are job-specific, "travel" and "physical surroundings" were judged likely to be occupational in scope.

Display Label and Information Strips (Exhibit IV-9). The display label was a piece of cardboard under which the information strips were aligned. It labeled the parts of the information strip: "Spec." (for specification), and "X," "Y," and "Z" for the three occupations.

Information strips contained characteristics and information about the three occupations. In some cases the specification box was completely blank, so that the student's language could be used. In all cases there was room to write in the amount or level desired.

The characteristics on the information strips corresponded to those on the descriptive cards. Information about the three occupations was predetermined so that none of the three occupations would be universally attractive or dismal, and yet the configuration of information would not be blatantly lacking in verisimilitude. Thus, an equal number of positive and logically "congenial" characteristics were clustered in each occupation, along with equal numbers of negative and neutral characteristics. (See Exhibit IV-10.) The numbers under each occupation represented the instrumentality of information scaled as follows: 3 = very likely (colored green), 2 = possible, and 1 = very unlikely (colored red).

Attractiveness Scale (Exhibit IV-3). To rate the attractiveness of the three occupations, students moved markers representing the occupations along an attractiveness scale that ran from +15 to -15. The midpoint, 0, was labeled "indifferent." Other labels indicated that as the marker went up, students felt better about the occupation and as it moved down they felt worse.

Importance Scale (Exhibit IV-6). To show the relative importance of their specifications and other intrinsic rewards and satisfactions, students used a second scale, consisting of pockets, which ran from 0, of no importance, to 8, of greatest importance.

Recording Forms (Exhibits IV-7 & 8). The SOC Recording Form, Exhibit IV-8, had three major sections for Phase 1, Phase 2, and final ratings and desirability sums. As specifications were made in Phases 1 and 2, they were recorded, together with the scale positions. Overall ratings were recorded at the end of Phase 1 and Phase 2. A final rating for all information was recorded in the third section. Desirability sums were computed on the Desirability Sum Worksheet and entered on the recording form next to the ratings.

The Desirability Sum Worksheet, Exhibit IV-7, recorded the characteristics which were specified, chosen, or not chosen, together with the weights assigned by the students. One column under each occupation showed the instrumentality of each item of information given to the students, scaled as follows: "very likely" = 3, "possible" = 2, and "very unlikely" = 1. The product was the student's weight multiplied by the instrumentality of the information. Desirability sums were computed for Phase 1 and Phase 2. The cumulative desirability sum was the sum of Phase 1 and Phase 2 desirability sums. The ideal desirability sum was the cumulative desirability sum plus products of characteristics which were not chosen or specified by the student. Characteristics assigned a weight less than 4 were not included in computing desirability sums.

SOC Script (Exhibit IV-11). The script was read by the interviewer to the student as they went through the game. It also contained directions to the interviewer.

Guidelines for Administering SOC (Exhibit IV-12). The guidelines contained directions on how to classify specifications and which information strips to show the student in response to specifications.

Average Ratings and Desirability Sums for the SOC Occupations

Though fictional, the SOC occupations were designed to simulate real-life occupations with an equal balance of attractive and unattractive features. In addition, some thought was given to shaping the features of the three SOC occupations to different kinds of students. To investigate that prospect, an analysis was undertaken to find out whether the value profiles of students from Spring 1974 could be classified according to some typology. The method used was a cluster analysis [Gruvaeus & Wainer, 1972], which revealed that profiles did not cluster. Thus, students could not be classified in such a way as to construct occupation profiles that would match student types.

Since students rated the SOC occupations, we can see how successful we were in developing three occupations that balance attractive and unattractive characteristics so that none would be universally desirable to students nor unrelievedly abhorrent. Thus, students' choices would not be a foregone conclusion, but would be a function of complex interactions between their own values and the occupational characteristics.

Table IV-2 shows the mean ratings across all students for the three occupations at the end of Phase 1, Phase 2, and overall. On a 31-point scale (from 0 to ±15), the ratings were very close, ranging from 2 to 4.5. All ratings were positive, indicating that the occupations were all somewhat attractive. The standard deviation ranged between 5.2 and 6.0, so that no one occupation emerged as being universally more desirable than the others.

TABLE IV-2

MEAN RATINGS OF SOC OCCUPATIONS

Occupation	Phase 1	Phase 2	Overall
X	4.0	2.2	4.5
Y	2.0	3.0	3.0
Z	4.4	3.6	3.5

Like the ratings, the desirability sums for the three occupations fell quite close together. Table IV-3 shows the mean desirability sums across all students for the three occupations at the end of Phases 1 and 2 as well as the cumulative and ideal desirability sums. The standard deviation was between 10 and 20.

TABLE IV-3

MEAN DESIRABILITY SUMS OF SOC OCCUPATIONS

Occupation	Phase 1	Phase 2	Cumulative DS	Ideal DS
X	53.7	32.8	86.4	98.7
Y	49.1	32.8	83.1	92.6
Z	51.0	34.6	85.6	97.6

Frequency of Selection of Each Occupation in SOC Game, Spring 1975

Table IV-4 shows the frequency with which all students selected occupations X, Y, and Z at the end of the game.

Despite the overall comparability of the three occupations in terms of ratings and desirability sums, occupation X was most frequently selected by all students (47%). Occupations Y and Z were chosen with about the same frequency (25% for Y and 28% for Z).

Ninth graders selected Occupation X nearly one-half the time (47%). Occupation Z was second (37%). Occupation Y was selected least often (16%).

Like the ninth graders, the twelfth graders selected Occupation X most frequently (47%). Unlike the ninth graders, twelfth graders selected Occupation Y (33%) more frequently than Occupation Z (20%).

TABLE IV-4

FREQUENCY OF SELECTION OF EACH OCCUPATION IN SOC GAME, SPRING 1975

	Occupation X	Occupation Y	Occupation Z
Grade 9	47% (14)	16% (5)	37% (11)
Grade 12	47% (14)	33% (10)	20% (6)
TOTAL	47% (28)	25% (15)	28% (17)

A possible explanation for the popularity of X may be its high instrumentality rating on "Income," which was the most common characteristic specified by students.

The "Desirability" of Occupations "Chosen"

Table IV-5(a) shows, by grade, the percentage of students whose occupational choice at the end of Phase 1 (after self-generated specifications and before unsolicited information) was an occupation with the highest, second highest, or lowest desirability sum.

None of the students chose the occupation with the lowest desirability sum. Over 3/4 of all students (77%) chose the occupation with the highest desirability sum. Freshmen were more likely (83%) to select an occupation with the highest desirability sum than were seniors (70%).

Table IV-5(b) shows, by grade, the percentage of students whose occupational choice at the end of Phase 2 was an occupation with the highest, second highest, or lowest desirability sum. The choice at the end of Phase 2 was based on information about three characteristics selected by the student. Previous occupational information was temporarily ignored.

At the end of Phase 2, 79% of all students chose the occupation with the highest desirability sum. More seniors (83%) than freshmen (73%) chose the occupation with the highest desirability sum. However, two of the seniors chose the occupation with the lowest desirability sum. None of the freshmen did so.

Table IV-5(c) shows students' choices at the end of the game based on cumulative and ideal desirability sums. The cumulative desirability sum is the sum of Phase 1 and Phase 2 desirability sums. The ideal desirability sum is the cumulative desirability sum plus the sums of products for rewards and satisfactions which the student did not specify in Phase 1 or select in Phase 2.

Freshmen (93%) were more likely to choose the occupation with the highest cumulative desirability sum than seniors (87%). Freshmen and seniors did almost the same (83% vs. 80%) in choices compared with the ideal desirability sum. In making a final choice, one senior chose the occupation with the lowest cumulative and ideal desirability sums. None of the freshmen did so.

Overall, the percentage of students selecting the occupation with the highest cumulative desirability increased from 77% at the end of Phase 1 to 90% at the end of the game.

When we compare Tables IV-5(a), (b), and (c) to Tables III-3(a) and III-3(b) of the Fall 1974 study, p. 53, we see that up to 20% of all students in Fall 1974 chose occupations with the lowest desirability sum compared to none in Spring 1975. This may have been due to changes made in the SOC game wherein real occupations and real information were replaced by occupations of the future, and standard information ("very likely," "possible," "very unlikely") was given in response to specifications. Therefore it seems that information in the Spring 1975 version made desirability of occupations clearer to the students. For example, students in the fall study could interpret a piece of information such as "may direct one or two other employees" as favorable or unfavorable. In Spring 1975, a rational student who specified "an average amount of leadership" would have to interpret a response of "very likely" as favorable and "possible" as less favorable. Also information could be synthesized more easily because of the faces and color coding on the answer strips.

TABLE IV-5(a)

FREQUENCY WITH WHICH OCCUPATIONS AT VARIOUS LEVELS OF DESIRABILITY WERE CHOSEN AT END OF PHASE 1, SPRING 1975

	Highest Desirability	Second Highest Desirability	Lowest Desirability
Grade 9	83% (25)	17% (5)	0
Grade 12	70% (21)	30% (9)	0
Grades 9 & 12 Total	77% (46)	23% (14)	0

TABLE IV-5(b)

FREQUENCY WITH WHICH OCCUPATIONS AT VARIOUS LEVELS OF DESIRABILITY WERE CHOSEN AT END OF PHASE 2, SPRING 1975

	Highest Desirability	Second Highest Desirability	Lowest Desirability
Grade 9	73% (22)	27% (8)	0
Grade 12	83% (25)	10% (3)	7% (2)
Grades 9 & 12 Totals	79% (47)	18% (18)	3% (2)

TABLE IV-5(c)

FREQUENCY WITH WHICH OCCUPATIONS AT VARIOUS LEVELS OF DESIRABILITY WERE CHOSEN AT END OF GAME, SPRING 1975

(Based on Cumulative Desirability Sums)

	Highest Desirability	Second Highest Desirability	Lowest Desirability
Grade 9	93% (28)	7% (2)	0
Grade 12	87% (26)	10% (3)	3% (1)
Grades 9 & 12 Totals	90% (54)	8% (5)	2% (1)

(Based on Ideal Desirability Sums)

	Highest Desirability	Second Highest Desirability	Lowest Desirability
Grade 9	83% (25)	17% (5)	0
Grade 12	80% (24)	17% (5)	3% (1)
Grades 9 & 12 Totals	82% (49)	16% (10)	2% (1)

Comparing Types of Specifications Most Frequently Made by Ninth and Twelfth Graders

In Phase 1 of SOC, students were given ten minutes to generate specifications about occupations. Table IV-6 gives the frequencies and rank order of these specifications for ninth and twelfth graders.

From Table IV-6 we see that the top-ranked, self-generated specifications are the same for both ninth and twelfth graders: "income," "security," "variety," "helping others," and "leisure." (Also, if the tally for the three interest fields were combined, "interest field" would rank among the top five for both ninth and twelfth graders.)

Table IV-7 compares the top-ranked characteristics (specified by 8% or more of the sample) from the Fall 1974 study to those from the Spring 1975 study. "Income," "interest field," "leisure," and "variety" were among the characteristics most frequently specified by 9th and 12th graders in both studies.

"Physical surroundings" were mentioned frequently in the Fall 1974 study but not by the Spring 1975 sample. This may be due to a stricter policy by interviewers in Spring 1975 of not responding to specifications that were appropriate only for jobs rather than occupations.

"Helping others" and "security" were ranked higher in Spring 1975 than in Fall 1974. Perhaps students were more conscious of security because of increases in unemployment.

At any rate, it seems clear that these lists comprise a finite universe of specifications that students generate. This definition of the list enables us to anticipate almost any specification that a student will generate and to be prepared with appropriate information--i.e., relevant to that specification--for occupations X, Y, and Z.

TABLE IV-6

TOPICS OF SELF-GENERATED SPECIFICATIONS, SPRING 1975

	9th Graders (30)			12th Graders (30)		
	f	%	r	f	%	r
Income	25	20	1	25	20	1
Security	10	8	3	13	10	3
Variety	10	8	3	15	11	2
Helping Others	11	9	2	12	9	4
Leisure	10	8	3	15	11	2
Leadership	7	6	4	7	5	5
Independence	7	6	4	6	4	6
Interest Field #1*	7	6	4	6	4	6
Education	4	3	7	7	5	5
Prestige	5	4	6	7	5	5
Interest Field #2**	6	5	5	3	2.5	8
Interest Field #3***	6	5	5	3	2.5	8
Ability #1****	4	3	7	4	3	7
Ability #2	2	2	9	1	1	10
Ability #3	3	2	9	2	2	9
Work Set	3	2.5	8	3	2.5	8
Travel	2	2	9	3	2.5	8

* Interest Field #1 includes scientific, verbal, business and administration fields.

** Interest Field #2 is the personal contact field.

*** Interest Field #3 includes technological and artistic fields.

**** Ability #1, #2, & 3 refer to a high level of ability required in working with data, people, and things respectively.

TABLE IV-7

COMPARISON OF SELF-GENERATED SPECIFICATIONS MADE BY STUDENTS (8% OR MORE), FALL 1974 AND SPRING 1975

Fall 1974

9th Graders	
Income	14%
Physical Surroundings	13%
Interest Field *	12%
Leisure	9%
Variety	9%
Education	8%

12th Graders	
Interest Field *	15%
Income	13%
Physical Surroundings	11%
Education	10%
Leisure	8%
Variety	8%

Spring 1975

9th Graders	
Income	20%
Interest Field (combined)	16%
Helping Others	9%
Variety	8%
Leisure	8%

12th Graders	
Income	20%
Variety	11%
Leisure	11%
Security	10%
Helping Others	9%
Interest Field (combined	9%

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* In the Fall 1974 administration, "interest field" included all interest fields. For purposes of comparison, the three interest fields were combined in the Spring 1975 data.

Description of SOC Measures

In appraising a student's competence in career decision-making, we have defined as criteria the extent to which the student knows what information he needs, can get the information he wants, and can use the information he has. While these competencies are logically sequential, the behavior in which they appear may provide indices of more than one at a time. For example, as indicated below, the nature of the student's own specifications can yield observations of more than one competency. Nevertheless, the three competencies defined are useful as logical categories for describing the measures.

Knowing what information he needs. The good career decision-maker (CDM) can specify all the characteristics that are most important to him in an occupation. One way to measure this is to see how many of a student's three top-weighted characteristics were specified in Phase 1. This measure is referred to as TOP VAL. The CDM who knows his own values should, of course, specify in Phase 1 all three of the occupational characteristics that are most important to him as indicated by the weights he assigns later to all characteristics.

A second way to see whether the most important characteristics were generated by the student in Phase 1 is to look at the ratio of the average weight assigned to characteristics in Phase 1 and the average weight assigned in Phase 2. This measure, referred to as W 1/2, shows whether self-generated specifications were seen as more or less important than characteristics selected later. The ratio for a CDM who knows his own values will be greater than one.

A third measure, N SPECS, is the number of specifications generated in Phase 1. A CDM who knows what he needs can be fluent and explicit about it, and therefore will tend to make a relatively large number of specifications within the time allowed. This measure might be expected to verge also into the next category, since fluent and explicit specifications are also instrumental in getting information.

Based on a similar principle, a fourth measure, N PROBES, is the number of clarifying questions used by the interviewer to help the student frame a mutually understandable specification in Phase 1. For example, if a student made a subjective specification such as, "I want to feel useful," a probe would ask the student to specify something about an occupation that would make him feel useful. The use of probes was governed by specific guidelines for interviewers, indicating when and how probes should be used. An investigation as to whether interviewers varied in number of probes showed no significant differences between interviewers. Since a CDM who knows his own values and is also competent in getting information will state specifications which are unambiguous and which are isomorphic with characteristics of occupations, the smaller the N PROBES score the better. Thus, we would hypothesize that N PROBES would be negatively correlated with the other scores.

Getting the information he wants. As indicated above, N SPECS and N PROBES overlap the previous category ("knowing") and this one ("getting"). Another measure for this category comes from Phase 2. These students have an opportunity to select characteristics of occupations about which they would like information. A measure of how good the student is at getting the information he wants is the ratio of the average weight assigned to characteristics in Phase 2 and the average weight assigned to "other characteristics," those not selected in Phase 2. This measure is referred to as W 2/3. It indicates competency in identifying and selecting characteristics of importance, quite independent of ability in generating or initiating specifications, as a means of getting relevant information. However, a high TOP VAL and a high W 1/2 along with high N SPECS might tend to preclude a high W 2/3.

Using the information he has. Several measures show how well the student is able to apply information to the process of discriminating between occupations. The standards for comparing each student's ranking of occupations are their desirability sums, which combine what the student wants with what the occupation offers, providing an index of utility. The desirability sum (DS) for an occupation is computed as follows: The weight a student has assigned to each characteristic (0-8) on the importance scale is multiplied by the instrumentality of the occupation for that characteristic (instrumentality reflects the capability of each occupation for meeting a student's specification, scaled as "very likely" = 3, "possible" = 2, and "very unlikely" = 1). DS for each occupation is the sum of these products. Characteristics weighted less than 4 are disregarded in the computation of DS because they are considered by the student to be of less than moderate importance and therefore should not influence the overall desirability of an occupation. (See DS Worksheet, Exhibit IV-7.)

Phase 1 DS's are based solely on characteristics specified in Phase 1. Phase 2 DS's are based solely on characteristics specified in Phase 2. Cumulative DS's are the sum of Phase 1 and Phase 2 DS's. The Ideal DS's are the cumulative DS plus the sums of products for characteristics weighted 4 or more which were not specified or selected in Phases 1 and 2. They indicate what the desirability of each occupation would have been if all important characteristics had been specified.

The most obvious measure of a student's ability to discriminate between occupations on the basis of their utility is to see whether he chose the occupation with the highest DS at the end of Phase 1 and on his final rating as compared to both the cumulative and ideal DS's. A CDM who is competent in using the information he has would select the highest DS in all cases.

A second measure, RAT-DS, indicates the difference between ratings (i.e., marker positions) and rescaled desirability sums for each occupation. To rescale the DS, it is divided by the sum of all the weights that a student assigned to all characteristics: Phases 1 and 2 and "other characteristics." In other words, the rescaled DS gets rid of variation attributable to individual differences in total weights assigned and is therefore comparable across all students. The measure, RAT-DS is the sum of the differences between ratings and rescaled DS's recorded for Phase 1, Phase 2, final-cumulative, and final-ideal. A good user of information would show close agreement between ratings and desirability sums and therefore would have a relatively small value for RAT-DS.

Since this measure is a difference between two kinds of scales, the number *per se* has little meaning. A normative interpretation is provided by converting the number into a standard score.

A third measure of how well a student uses the information he has, WT-CH, is the summed differences between the weight assigned to each characteristic and the amount of marker movement made for that characteristic. A good user of information should be more responsive to the impact of information about characteristics he has deemed important than about characteristics he considers less important. Therefore, he should show high agreement between weight (importance to the student) and change (marker movement) for each characteristic, with higher weights producing larger changes. Since WT-CH is again a difference between two different types of scales and is not interpretable in absolute terms, a standard score is given.

A fourth and final measure, AV CH 1/2, is the ratio of the average change (marker movement per characteristic) in Phase 1 to the average change in Phase 2. This cuts along the first and third categories ("knows" and "uses"). The average change in Phase 1 should be greater than in Phase 2 because the good CDM will generate his most important specifications in that phase ("knows") which in turn should inspire maximum movement ("uses").

Means and Standard Deviations of SOC Measures

Means and standard deviations of SOC measures are presented in Table IV-8. Also provided are the percentages of students selecting the occupation with the highest desirability at various stages: (1) at the end of Phase 1; (2) at the end of the game, with desirability sums based on characteristics from Phases 1 and 2; and (3) at the end of the game using ideal desirability sums. Finally, in (4),is the percentage of students selecting the highest desirability occupation in all three cases cited above.

The major highlights from the table are summarized below.

- At least seven of the eight SOC scores registered sizeable individual differences with standard deviations running high. The exception is AV CH 1/2. A limitation on the use of the scale (±3 points) accounts for the apparently lower variance of this measure.

- On the average, students assigned only slightly higher weights to specifications in Phase 1 than to those in Phase 2 (W 1/2 = 1.1) and considerable higher weights to specifications in Phase 2 than to those presented at the final stage of the game (W 2/3 = 2.4).

- Setting a time limit of 10 minutes in which students could generate specifications seems to have had little effect on the number of characteristics elicited. In the past, without time restrictions imposed, the average number of student specifications was approximately five.

- Most students selected the occupation with the highest desirability sum.

TABLE IV-8

MEANS AND STANDARD DEVIATIONS OF SOC MEASURES, SPRING 1975

(N=30: 9th & 12th Graders Combined)

	$\bar{X}$	S.D.
TOP VAL	2.0	.7
W 1/2	1.1	.3
N SPECS	4.3	1.1
N PROBES	2.0	1.7
W 2/3	2.4	1.9
AV CH 1/2	1.0	.2
RAT-DS	54.5	20.7
WT-CH	2.0	.6

Percent Choosing Occupation with Highest DS at:	%
(1) END PHASE 1	77
(2) FINAL/CUM DS	90
(3) FINAL/IDEAL DS	82
(4) 1, 2 & 3 above	62

Intercorrelations Among SOC Measures

Intercorrelations among the SOC measures are presented in Table IV-9. It should be noted that some of the correlations may be artifacts of overlapping information. The clearest illustration is the correlation between TOP VAL and W 1/2 (r = .65). Both scores are a function of the extent to which specifications in Phase 1 represent characteristics that are weighted high in importance.

Aside from such built-in relationships, the magnitude of the intercorrelation coefficients indicates that, in general, the measures are relatively independent of one another. The negative relationships noted between N PROBES and the first three measures are of course consistent with expectation.

Students who specify characteristics representing their top-weighted values and who generate more specifications tend to require fewer probes. This finding, notwithstanding the premise that a greater number of specifications provides a larger base or opportunity for probes, suggests that students who name their most important occupational values tend to express them most clearly and unambiguously. (Presumably, there would have been even higher negative coefficients if N PROBES had been defined as a ratio of the number of probes to N SPECS.)

Knowledge of the most important values does not, however, in this sample appear to be related to fluency. Even though TOP VAL is related to N PROBES and N PROBES to N SPECS, neither TOP VAL nor W 1/2 is related to N SPECS. Perhaps the most fluent students are able to generate more specifications because they dip into characteristics of lower importance. Or perhaps they are more likely to give every characteristic of concern to them a higher weight.

This latter hypothesis may be borne out by the relatively high correlation between N SPECS and W 2/3. This coefficient (.46) is the highest in the matrix. Thus, we see what may be an interesting tendency for those who generate more specifications to assign relatively high weights to the three additional characteristics that they select from a residual list of characteristics. They must give low weights to only those characteristics they neither specified themselves nor selected.

The negative correlation between W 1/2 and RAT-DS (-.24) suggests that students who specify characteristics of greater importance than the three characteristics they select from the remaining list tend also to rate the occupations in a manner consistent with the Desirability Sums of the occupations. (RAT-DS is, of course, a measure on which lower scores are better.)

The relationship between AV CH 1/2 and TOP VAL (.26) and W 1/2 (.39) indicates that students tend to use the attractiveness scale in a manner consistent with how important they feel the characteristic is to them. These correlations, along with the correlation between AV CH 1/2 and N SPECS (.26), suggest that there may be a connection between knowing values and logical use of information relevant to those values.

TABLE IV-9

INTERCORRELATIONS AMONG SOC MEASURES, SPRING 1975*

(N=30: 9th & 12th Graders Combined)

	TOP VAL	W 1/2	N SPECS	N PROBES	W 2/3	AV CH 1/2	RAT-DS	WT CH
TOP VAL	1.00							
W 1/2	.65	1.00						
N SPECS	.07	-.11	1.00					
N PROBES	-.27	-.16	-.26	1.00				
W 2/3	-.22	-.10	.46	.03	1.00			
AV CH 1/2	.26	.39	.26	-.06	.07	1.00		
RAT-DS	-.06	-.24	00	-.06	-.11	-.11	1.00	
WT-CH	.05	.07	-.13	-.08	-.15	.05	-.17	1.00

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* The four dichotomized measures--whether at various stages the student chose the occupation with the highest DS--are omitted from this Table of Intercorrelations.

Profile of a Hypothetical Good CDM

Before looking at the performance of representative students in the Spring 1975 study, it may be enlightening to provide a standard of competencies in the form of a hypothetical Student X, whose responses were constructed to represent "good" career decision-making behavior. Exhibits IV-7 and IV-8 record the moves, weights, and ratings for Student X. In addition, Table IV-10 shows X's scores compared with group means for the Spring 1975 study.

In virtually all cases, Student X did quite well in both criterion- and group-referenced terms.

Looking at measures of how well the student knows what he needs in an occupation and can get the information he wants, we see that Student X specified all three of his top-weighted characteristics in Phase 1. The average weight for Phase 1 characteristics, 7, exceeded the average weight for Phase 2, which was 4 (W 1/2 = 1.8). On the whole, Student X's specifications in Phase 1 were more important to him than the characteristics he selected in Phase 2. X had 5 specifications, one above the group mean, and no probes. In other words, he demonstrated both fluency and clarity in making specifications. So far, his scores are clearly "good" in both criterion-referenced and group-referenced comparisons.

But W 2/3, a comparison of the weights assigned to Phase 2 characteristics relative to other characteristics, tells another story. While X did well, his score was below the group mean. Looking at why this is so, we find that students in the spring sample tended to assign higher weights to Phase 2 characteristics than X did. Indeed, the average of their Phase 2 weights equaled the average of their Phase 1 weights (W 1/2 = 1). But X was able to specify all his most important values and so gave lower weights to the three characteristics he selected in Phase 2 (W 1/2 = 1.8). Thus, although the weights X assigned to "other characteristics" were low, the ratio W 2/3 was not as great as the mean observed in the field test. This points out a deficiency in the measure that we had not anticipated and suggests that it should not be used normatively. Instead, it may be regarded as categorizing students in reference to a standard: $W2 > W3$ is a "good" sign, whereas $W2 < W3$ is a "bad" sign.

TABLE IV-10

SOC SCORES FOR HYPOTHETICAL GOOD CDM, SPRING 1975

SOC Measure	Group Mean	S.D.	Raw Score--"X"	Standard Score--"X"
TOP VAL	2.0	.7	3.0	
W 1/2	1.1	.3	1.8	
N SPECS	4.3	1.1	5.0	
N PROBES	2.0	1.7	0	
W 2/3	2.4	1.9	2.0	
RAT-DS	54.5	20.7		+1.9
WT-CH	2.0	.6		+1.6
AV CH 1/2	1.0	.2	1.9	

CORRECT CHOICE	%	
(1) End Phase 1	77	Y
(2) Final/Cum DS	90	Y
(3) Final/Ideal DS	82	Y
(4) 1, 2, & 3 above	62	Y

How well did Student X use the information he had? The AV CH 1/2 score was 1.9, indicating that X made marker movements in Phase 1 almost twice those in Phase 2. Thus, we see X's ability to react in proportion to the importance of information received. Furthermore, he chose the occupation with the highest DS at the end of Phase 1 and on his final rating as compared with both cumulative and ideal DS's. Only 62% of the students in the sample chose correctly in all three cases. Beyond that, X's ratings show unusually good correspondence with DS's--much better, in fact, than most students in the Spring 1975 group. (Since X's RAT-DS raw score had no intrinsic meaning, it was converted to the standard score, +1.9.) Such close correspondence between X's ratings and Desirability Sums shows the student's ability to judge the attractiveness of the three occupations in a manner that reflects their desirabilities.

The WT-CH standard score for Student X was +1.6. In other words, student X was 1.6 standard deviations above the mean of the group in the extent of agreement between the weight he assigned each characteristic and his total marker movement for that characteristic. Consistency in the use of the scales, making bigger moves in response to information about more important characteristics, while not obviously diagnostic of competency in career decision-making, probably reflects a capacity to integrate subjective values and objective information.

To the standard of performance represented by X's scores, let us now compare the scores obtained by three representive students in the Spring 1975 administration of SOC.

Profiles of Three Students in the Spring 1975 Field Test

To show how the SOC measures can be used to diagnose a student's strengths and weaknesses in career decision-making, the recording forms and worksheets for three students are provided. (See Exhibits IV-13 through IV-15.) Profiles derived from these records are presented in Table IV-11. A discussion of these profiles follows.

Student #1 [Exhibits IV-13(a) & (b)]. Overall, Student #1 was a very good decision-maker. He specified all three of his top-weighted characteristics in Phase 1 (TOP VAL = 3) and his specifications were more important to him than the characteristics he selected in Phase 2 (W 1/2 = 1.2). He had a high number of specifications, 5, and no probes. Like the hypothetical good CDM, he knew what he wanted in an occupation and was able to make clear specifications.

Student #1 also did well on the measure, W 2/3. The characteristics not selected in Phase 2 were much less important than the ones selected--their average weight was 2 as compared to 6 for Phase 2. This student knew how to select the information he needed. His AV CH 1/2 score of 1.3 shows that he used information logically, making larger moves in responses to the information he received in Phase 1 (for the specifications that were more important) than for the information he received in Phase 2.

Like the hypothetical good CDM (and 62% of the sample), Student #1 chose the occupation with the highest DS in all cases, showing an ability to use the information he had.

The RAT-DS and WT-CH measures are standard scores comparing each student with the reference group in ability to use the scales properly. The diagnostic value of these measures is not immediately clear and awaits further evaluation which will relate them to other known quantities.

Student #1 did slightly worse on these measures than the group as a whole. His RAT-DS score was .4 SD below the mean, showing that correspondence between ratings and DS's was relatively low. Likewise, close agreement was lacking between weights and change (.4 SD below the mean). If these scores are indicators of how well a student applies information, they run contrary to the criteria of correct choices. However, the correct choice measures are independent of scale usage and, as dichotomies, represent a gross measure of how well a student can use information. RAT-DS is an attempt to provide a measure permitting finer discriminations of students' relative ability to translate the attractiveness of occupations into scale positions. Similarly, WT-CH indicates the student's consistency in assessing importance of information and showing its impact on him. Since almost 2/3 of the students selected occupations with the highest desirability, these finer measures--pending further analysis and evaluation--might be needed to get further discrimination.

Thus, Student #1 appeared to show considerable competence in most career decision-making behaviors evoked by SOC: he knew his own values, initiated multiple specifications on important characteristics, and expressed them clearly; he sought and selected the most important residual characteristics; and he applied information to decision-making in a logical and rational way, distinguishing what may be regarded as correct choices. On the other hand, notwithstanding his ability to come up with the "right answers" in comparing one occupation with another, there appeared to be some weaknesses in manipulating information about one occupation at a time.

Student #2 [Exhibits IV-14(a) & (b)]. Student #2 was not quite so good as Student #1 in getting the information he wanted and in making clear specifications. Only two of his top three values were specified in Phase 1, although he specified characteristics of higher average importance in Phase 1 than those he selected in Phase 2 (W 1/2 =1.3). He made one less specification than Student #1 and had one probe, indicating that he needed help from the interviewer in formulating specifications.

Student #2 did not do so well as the group in getting the information he needed. Phase 2 characteristics had an average weight of 5.7 and other characteristics an average weight of 4.2 (W 2/3 = 1.2). One characteristic which was not selected in Phase 2 received a higher weight than two of the characteristics which were selected. We can conclude that Student #2 did not measure up to Student #1 in knowing and getting the information he needed.

While AV CH 1/2 shows that the impact of Phase 1 information items was greater than Phase 2 items, this student was not able to use the information he had in selecting the occupation with the highest DS at the end of Phase 1, nor was he able to make the choices that agreed with the Ideal DS. This is an unusual case, since most of the students in the sample were able to do so.

The somewhat poor showing on WT-CH suggests further problems in using information.

Student #3 [Exhibits IV-15(a) & (b)]. Student #3 was not able to get the information he wanted. He specified only one of his three top-weighted values in Phase 1. W 1/2 was less than 1 showing that, in general, he did not specify the most important characteristics in Phase 1. He made four specifications which required eight probes, an unusually high number. Student #3 was not able to formulate his specifications clearly.

As for selecting the information he needed, Student #3's average weight for Phase 2 characteristics was 7.7 and for other characteristics was 4, making the W 2/3 ratio equal to 1.9, which is below the group mean of 2.4. The high average weight for "other characteristics," 4, is a further indication that this student was not able to differentiate clearly what information he wanted from the pool of information available. The AV CH 1/2 score of less than 1 shows that the student's responses to items of information in Phases 1 and 2 was consistent with the weights he assigned to characteristics in Phases 1 and 2, respectively--that is, Phase 2 weights were higher than Phase 1 weights, and Phase 2 moves were greater than Phase 1 moves.

This student was able to use the information he had to select the occupation with the highest DS in all three cases. But the last two scores, based on the use of the scales, show a consistently poor performance.

Overall Student #3 appears to have had some difficulty in each of the major areas of career decision-making.

TABLE IV-11

SOC SCORES FOR STUDENTS IN THE SPRING 1975 FIELD TEST

	Students		
SOC Measures	#1	#2	#3
TOP VAL	3	2	1
W 1/2	1.2	1.3	.4
N SPECS	5	4	4
N PROBES	0	1	8
W 2/3	3.0	1.2	1.9
AV CH 1/2	1.3	1.3	.9
RAT-DS	-.4	0.0	-1.8
WT-CH	-.4	-.5	- .2
CORRECT CHOICE			
End Phase 1	Y	N	Y
Final/Cum DS	Y	Y	Y
Final/Ideal DS	Y	N	Y

Comments on Scores

The scores developed for the Spring 1975 administration have considerable summary power: they describe individuals in a way that enables us to recapitulate and characterize their behavior in the simulation exercise. Obviously, however, as in any summary, a great deal of information is lost. As we examine these scores in the light of detailed descriptions of students' behavior on SOC, we feel that they have the virtue of depicting intra-individual variations quite well. Thus, we might say that a given student knew what he wanted, specified fluently and clearly what he valued, and yet had difficulty handling information in a logical and consistent way. Another student might be said to have difficulty in specifying what he wanted, yet recognized important characteristics when they were presented to him and handled information about them quite adequately.

Yet in making these statements about students, we are depending on a melange of scoring operations and interpretations. Some scores are criterion-referenced, others group-referenced. Some involve continuous scales, while others are dichotomized. Some are entirely independent, while others are linked. Some are computed in a simple way--for example, tallies--but others involve a lot of arithmetic. Some interface clearly and openly with constructs, while others can be given meaning only through lengthy chains of inference.

As we study these scores, we find ourselves particularly dissatisfied with those that depend on reference groups rather than on criterion standards. After all, we do not have a good norms group for this tryout, nor is there likely ever to be a single norms group that will be universally useful for this kind of measure. Furthermore, the problems adumbrated above interact in complex ways when attempts are made to compare students on the basis of their SOC scores. Because the game is tailored to the individual student, the information upon which students base their decisions about the most desirable occupation is variable. One student may have more conflicting information than another, depending upon what characteristics he specifies or chooses. A student who names many specifications usually faces a more difficult decision than the student who has few specifications. In some cases, the student is penalized for his fluency. Thus, a student's performance in one category of competence may often depend on variable conditions generated by his performance in another.

Also, depending upon how a student assigns weights and the degree to which the information conflicts, one student may have to choose between occupations whose DS's are nearly equal whereas for another student they may be widely divergent. In other words, some students have "easier" choices to make than others. Of course, both these phenomena apply as well to real-life choices as to simulated occupational choice.

Another confusing factor is the student's interpretation of "possible" in response to a specification. Students interpreted this response in many ways: as slightly favorable, very favorable, neutral, slightly unfavorable, and very unfavorable. However, the instrumentality of this information was always 2. A student could therefore be internally consistent and logical in his interpretation of "possible," but could interpret it differently from other students.

Therefore, when information was seen in combination, an occupation with many "possible's" might seem more attractive to some students than to others. After all, one purpose of the simulation exercise is to allow students to work within their own frames of reference, to supply their own values and their own meanings. So it is to be noted that in the next administration of SOC, scores were considerably revised, along with a few changes in administration procedures.

Despite such revisions, the findings described previously and the considerations addressed in the comments above confirm our growing conviction that SOC scores are more appropriately applied to intra-individual analyses than to comparisons between individuals or groups. They provide a window through which we can observe the way each student handles the career decision-making tasks that he encounters in SOC. But the relationship between the student and SOC is interactive: even as the student responds to the tasks presented by SOC, so is SOC responsive (in varying degrees) to the student's behavior. Thus, the nature of some of the later tasks is influenced by what the student does earlier in the simulation. Inter-individual or inter-group comparisons on some of the scores may be muddied, then, by these interactions. A given score is much more meaningful when viewed in the context of other scores obtained by the same student than when pulled out of that context and compared in isolation with the corresponding score obtained by another student.

It is, after all, a major advantage of an individually administered test that it can be responsive to individual differences in behavior. Otherwise, one could more efficiently use a group-administered instrument.

EXHIBIT IV-1

PRESENTATIONS GIVEN TO EXPERIMENTAL & CONTROL GROUPS PRIOR TO ADMINISTRATION OF SOC

Control Group

We are from Educational Testing Service. In the next few weeks we will be seeing some of you individually to play a game that will measure how good you are at making decisions about careers. This game is part of a research project at ETS. The results will be strictly confidential and will not be part of your school record.

This is a chance for you to participate in a research project. It will only take one class period to do. Students who have already played the game have said that they learned new things about themselves. They also felt better prepared to think about occupations.

[For seniors--We know that your're concerned with graduation, but we would especially appreciate your participation. Remember, it's only one class period.]

Before you can participate, we need permission from your parents. Here is a letter for your parents. Be sure to show the letter to them tonight, have them fill in and sign the reply form, and return the form to this class tomorrow (or the next day). Once we have your signed permission slip, we will call you at home and arrange a time for you to play the game during a free period or a class period.

[For seniors--If you are over 18, you may sign the permission form yourself.]

Any questions?

EXHIBIT IV-1 (cont.)

Experimental Group

We are from Educational Testing Service. In the next few weeks we will be seeing some of you individually to play a game that will test how good you are at making decisions about careers. We would like the students in this class to do particularly well, so we will take some time today to help you prepare.

We plan to see several classes while we're here. Not all of them will get special help. Please do not discuss what we do today with any other students until the project is over, which should be in a few weeks. This game is part of a research project at ETS. The results will be strictly confidential and will not be part of your school record.

I'm not going to tell you a lot about the game now because you will be given detailed directions when you play it. However, when you play the game, I will ask you, "What is important to you in choosing an occupation?" Johnny might say, "high income" while Mary might say, "I want to do scientific research." Different people want different things.

Let's see what sort of things we can come up with as a group. Let's make a list. We already have two things on the list--high income and work in a particular field. What things are important to you in choosing an occupation?

> [List 5 specifications, with amount where needed, on the board. Point out job-specific specifications.]

Here are some things we haven't covered which other students have found important. [List other values, abilities, and working conditions.]

It's not enough to know what you want; you must also decide how much you want it. Since it's unlikely that you will get everything you want in an occupation, you have to decide which things are necessary to have and which things you could live without.

[Point to student.] Look at this list. Which of these things is most important and least important for you to have? [Call on 4-5 students.]

As you can see, people have different ideas about what they want and how important these things are to them.

In preparing for this game, we want you to make up your own list of what _you_ want in an occupation--not what someone else wants. You should also decide how important each thing is to _you._ If you know these things, you should do well in this game.

When you play the game, you may only have time to specify 5 or 6 things. So be sure that you have thought about them enough so that you can specify things that are most important to you. If you are unprepared, this will lower your score.

EXHIBIT IV-1 (cont.)

I will now pass out letters for you to take to your parents. We need their permission for you to play the game. Be sure to show the letter to your parents tonight, have them fill in and sign the reply form, and return the form to this class tomorrow (or the next day). Once we have your signed permission slip, we will call you at home and arrange a time for you to play the game. It will take one class period and we will schedule you sometime during the next 2-3 weeks during your free period. (Fill in your name, grade, house, and home telephone right now.)

This is a chance for you to participate in a research project. Students who have already played the game have said that they learned new things about themselves. They also felt better prepared to think about occupations.

Any questions?

EXHIBIT IV-2

LETTER TO PARENTS WITH PERMISSION SLIP

EDUCATIONAL TESTING SERVICE PRINCETON, N.J. 08540

Area Code 609
921-9000
CABLE-EDUCTESTSVC

Developmental Research Division

April, 1975

Dear Parent:

The Guidance Research Group at Educational Testing Service is developing a measure of competence in career decision-making for high school students. Its purpose is to evaluate, diagnose, and help improve decision-making skills. This project is funded by a grant from the National Institute of Education.

This is an opportunity for your child to learn something about himself and his future career choice. At the same time, your child will be assisting us in developing a procedure to measure competence in career decision-making. All information will be kept strictly confidential and used for research purposes only.

Your child's class has been selected for this research. Parental permission is necessary for your child to participate.

One class period is required of each student, but this will not interfere with his studies. We will contact your son or daughter by telephone to arrange a convenient meeting time.

We have the cooperation of Hightstown High School. We hope you will agree to your child's participation in this study. Please complete the form below and have your child return it to school tomorrow.

If you have any questions, please feel free to call me at 921-9000, ext. 2316 or contact Miss Linda Kay Thompson, Guidance Content Specialist, Hightstown High School.

Thank you for your cooperation.

Sincerely,

Lila Norris

Lila Norris
Co-Project Director

LN:mb

Student's Name ______________________________ Grade _____ House _____
(Please print)
Home Telephone ______________

[ ] I give
[ ] I do not give
} my permission for my son/daughter to participate in the Career Decision-Making Project.

Parent's Signature ______________________________

EXHIBIT IV-3

ATTRACTIVENESS SCALE

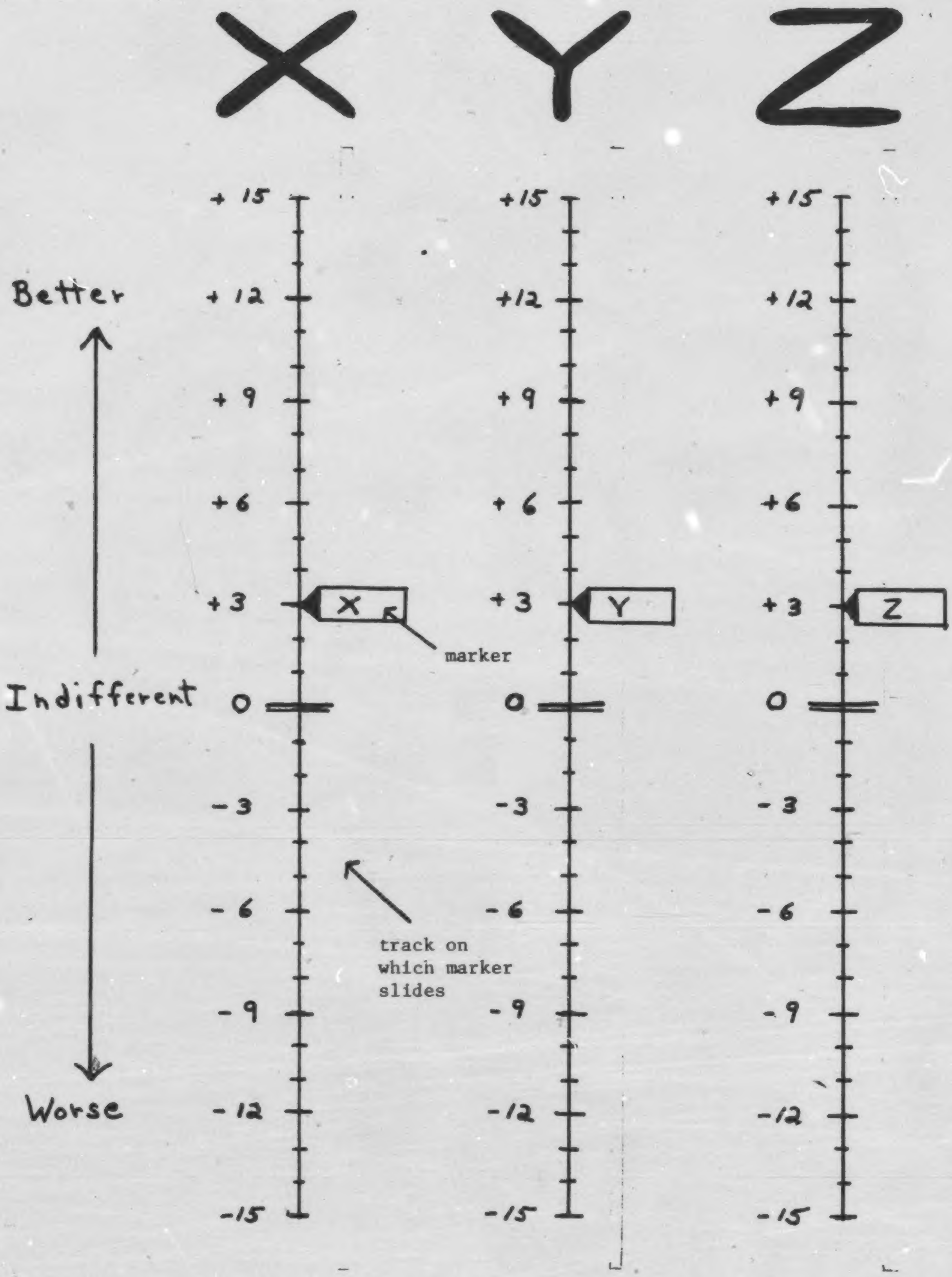

X
Y
Z
Better
Indifferent
Worse
+15
+12
+9
+6
+3
0
-3
-6
-9
-12
-15
X
Y
Z
marker
track on which marker slides

EXHIBIT IV-4

DESCRIPTIVE CARDS

REWARDS & SATISFACTIONS

The following definitions were typed on 3 x 5 cards. The name of the characteristic also appeared on the reverse side of the card.

Security concerns the degree to which your occupation and income are protected from hard times or new labor-saving inventions. With high security you would be reasonably sure of keeping your job and income. With low security you might easily lose your job and income.

Independence is the extent to which you make your own decisions and work with or without supervision or direction from others. If your occupation offers high independence, you would be your own boss. Low independence would mean working under close supervision, carrying out the decisions of others.

Leadership/Responsibility is the extent to which you guide others, tell them what to do, and are responsible for their performance. If your occupation offers high leadership/responsibility, you would direct activities and influence people. You would also accept responsibility for the performance of the people you direct. With low leadership/responsibility you would not direct other people and you would not be responsible for their performance.

Income is the amount of money you earn in an occupation. If your occupation offers high income, you would earn much more than you would in most other occupations. Low income means you would earn far less than you would in most other occupations, but you would still be able to support yourself.

Helping Others Directly is the extent to which you help people face-to-face as part of your occupation. If your occupation offers a great opportunity to help others, you would spend most of your time working with people to improve their health, education, or welfare as teachers and doctors do. If your occupation does not offer an opportunity to help others, you may do work--such as newspaper reporting--that is useful to society, but that does not assist other people face-to-face.

EXHIBIT IV-4 (cont.)

Work in Your Main Field of Interest

An interest field is a particular area of occupational activity. There are many different interest fields including scientific, verbal, administrative and business, personal contact, artistic, and technological. If working in your main field of interest is highly important to you, you would want your occupation to be in a particular field. If it is important to you, it would make little difference which field your occupation was in.

Leisure has to do with the amount of time your occupation will allow you to spend away from work. In an occupation which has lots of leisure you will have short hours, long vacations, and the chance to choose your own working hours. With low leisure you will often work long hours, including nights and weekends, with short vacations and no choice of hours.

Prestige is the degree to which an occupation commands respect in people's minds. An occupation with high prestige is one which most people look up to. An occupation with low prestige is one which does not command general respect.

Variety concerns the extent to which your work activities are many-sided. If your occupation offers a large amount of variety, you would find yourself frequently doing different kinds of things, interacting with many different people, and working in many different places. Low variety would mean doing mostly routine and repetitious work with the same co-workers and in the same place every day.

Required Occupational Education is the amount of education or training you must take beyond what you already have in order to meet entry requirements for an occupation. It is only education that is required to enter an occupation, not what you take for any other reason.

[Note: Although this comes under rewards and satisfactions, it is only used if specified by the student in Phase 1. This is because education is often seen as a means to other values and not as an occupational value. Its presence therefore tends to be confusing.]

EXHIBIT IV-4 (cont.)

ABILITIES

Requirement: Skill in Working with Intellectual Concepts

Skill in working with intellectual concepts means that a high level of intellectual work is required--using your brain rather than physical strength. Math or verbal skills must be high.

Requirement: Skill in Working with People

Skill in working with people means that you must be good at persuading, supervising, instructing and/or counseling other people. It may also involve work with plants or animals.

Requirement: Skill in Working with Things (tools, instruments, machines)

Skill in working with things means that you must be skillful with your hands or good at work with instruments, tools, and machines. It may also require physical strength or agility. Construction or creation of new physical objects may be involved.

WORKING CONDITIONS

Travel Requirements

This involves the extent to which travel is a requirement of the occupation.

Type of Work Setting

This involves the chances of working in a particular setting such as indoors or outdoors.

EXHIBIT IV-5

TYPICAL ARRAY OF INFORMATION IN RESPONSE TO STUDENT'S SPECIFICATIONS

Spec.	X	Y	Z
come above average	Very Likely ☺	Very Unlikely ☹	Possible 😐
terest Field business	Very Likely ☺	Very Unlikely ☹	Possible 😐
ecurity bove average	Possible 😐	Very Likely ☺	Very Unlikely ☹
ariety bove average	Very Unlikely ☹	Possible 😐	Very Likely ☺
eisure average	Possible 😐	Very Likely ☺	Very Unlikely ☹
ndependence average	Very Unlikely ☹	Possible 😐	Very Likely ☺
adership/ Responsibility average	Very Likely ☺	Very Unlikely ☹	Possible 😐
estige average	Very Likely ☺	Very Unlikely ☹	Possible 😐

EXHIBIT IV-6

IMPORTANCE SCALE

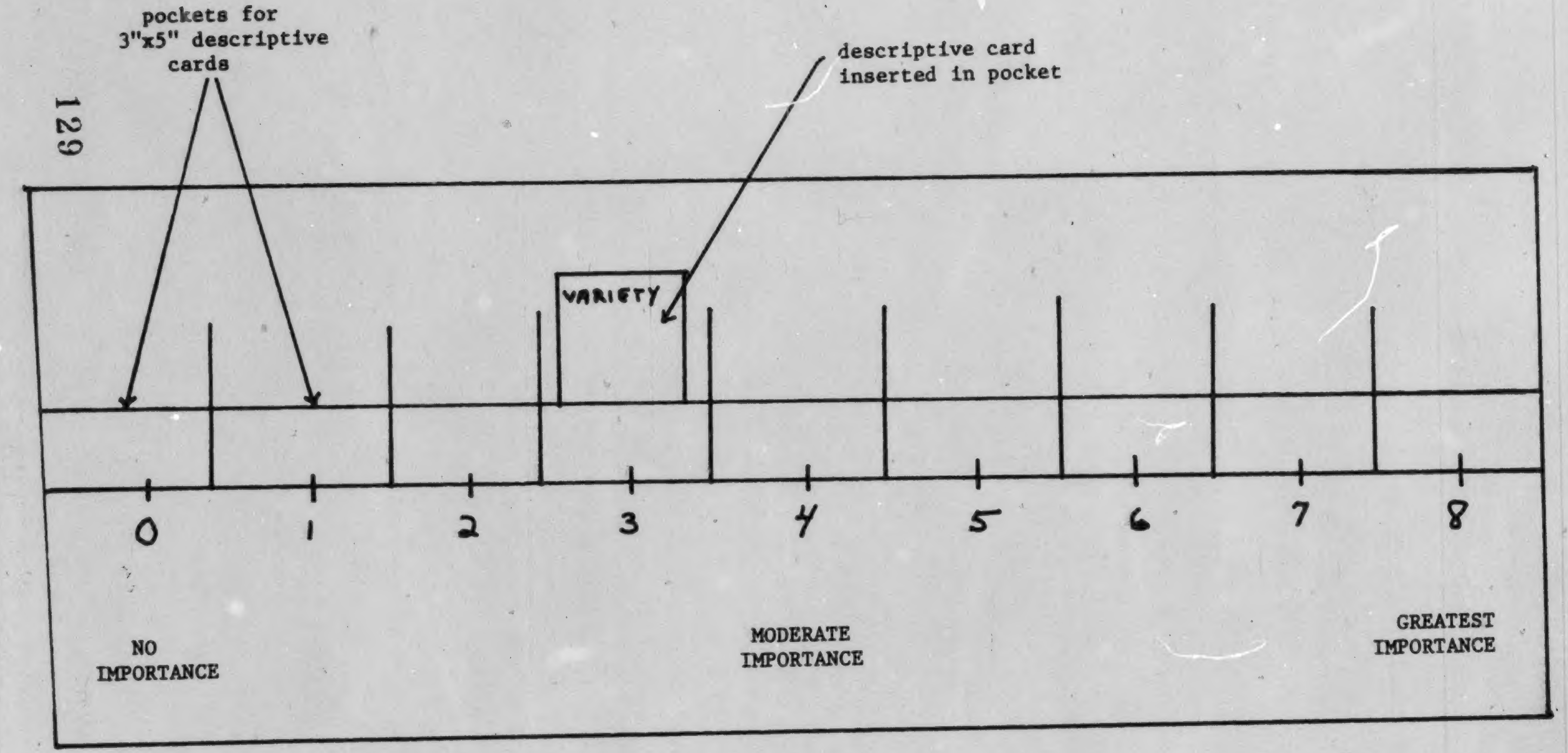

pockets for
3"x5" descriptive
cards
descriptive card
inserted in pocket
VARIETY
0
1
2
3
4
5
6
7
8
NO
IMPORTANCE
MODERATE
IMPORTANCE
GREATEST
IMPORTANCE

EXHIBIT IV-7

DESIRABILITY SUM WORKSHEET

Name ____________________

			X		Y		Z	
	Characteristic	Student's Wt.	Instr.	Prod.	Instr.	Prod.	Instr.	Prod.
Phase 1	Income	8	3	24	1	8	2	16
	Int. Field - bus.	8	3	24	1	8	2	16
	Security	7	2	14	3	21	1	7
	Variety	6	1	6	2	12	3	18
	Leisure	6	2	12	3	18	1	6
	Phase 1 D.S.			80		67		63

Phase 2	Independence	5	1	5	2	10	3	15
	Lead / Resp.	4	3	12	1	4	2	8
	Prestige	(3)	3	—	1	—	2	—
	Phase 2 D.S.			17		14		23
	Cum. D.S.			97		81		86

Other Characteristics							
Help Others Dir.	(2)	1	—	2	—	3	—
							130
Other D.S.							
Ideal D.S.			97		81		86

ID No. ____________

EXHIBIT IV-8
SOC RECORDING FORM

Student's Name ____________ Grade/School ____________ Interviewer's Name ____________ Date ____________

PHASE I

SPECS.	INCOME (above av.)	INT. FIELD business	SECURITY (above av.)	VARIETY (above av.)	LEISURE (av.)						Probes = 0		Phase 1 RATING	Phase 1 D. S.
X	+3	+6	+7	+4	+5								+5	80
Y	-3	-6	-3	-2	+1								+1	67
Z	+1	+2	-1	+2	-1								-1	63

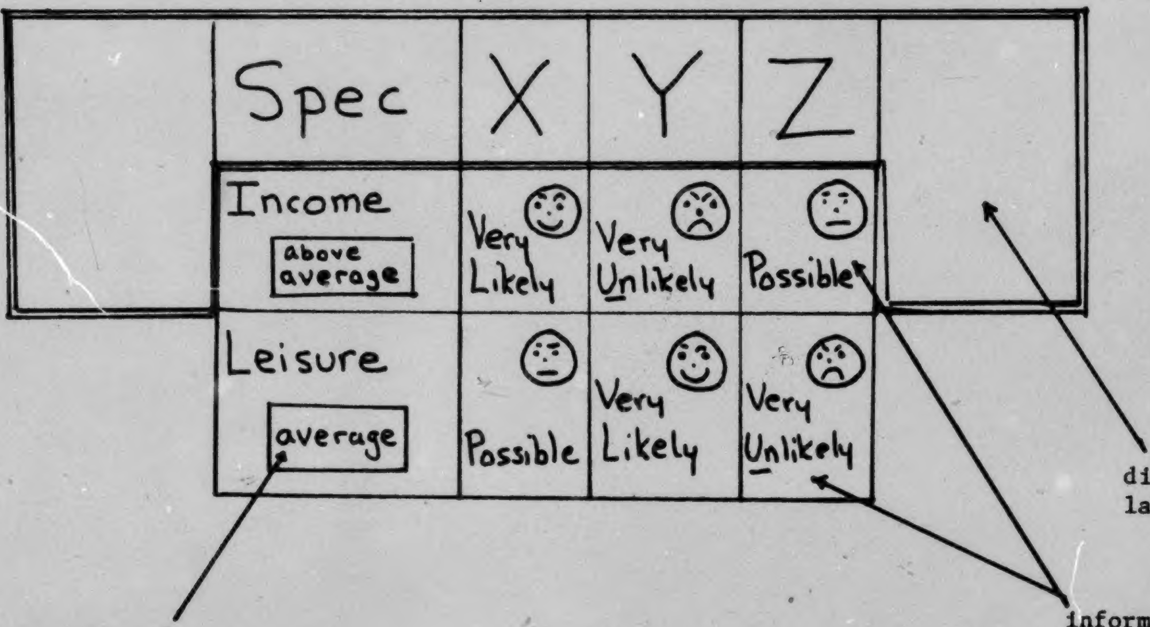
PHASE II

SPECS.	INDEP. (av.)	LEAD/RESP. (av.)	PRESTIGE (av.)		Phase 2 RATING	Phase 2 D. S.
X	-2	0	0		0	17
Y	0	-2	-2		-2	14
Z	+2	+2	+2		+2	23

Cum. D. S.	Final RATING	Ideal D. S.
97	+4	97
81	-3	81
86	0	86

EXHIBIT IV-9

DISPLAY LABEL AND INFORMATION STRIPS


Spec
X
Y
Z
Income
above average
Very Likely
Very Unlikely
Possible
Leisure
average
Possible
Very Likely
Very Unlikely

display label

information strips

space for writing in amount or level desired

("Very Likely" is colored green; "Very Unlikely" is colored red.)

EXHIBIT IV-10

INFORMATION STRIP CLUSTERS

Characteristic	X	Y	Z
INTEREST FIELD: Sci, Verbal, Admin	3	1	2
Ability - Concepts	3	1	2
Prestige	3	1	2
Leadership/Responsibility	3	1	2
Income	3	1	2
INTEREST FIELD: Personal Contact	1	2	3
Independence	1	2	3
Variety	1	2	3
Helping Others	1	2	3
INTEREST FIELD: Technological, Artistic	2	3	1
Ability - Things	2	3	1
Security	2	3	1
Leisure	2	3	1
Required Occupational Education	2	3	1
Working Conditions Physical Surroundings Travel	2	3	1

EXHIBIT IV-11

SOC SCRIPT, SPRING 1975

This is a game designed to test how good you are in making career decisions. It may also help you learn how to make better career decisions.

In this game, you are going to choose one out of three occupations that's best for you, and decide which one would be worst for you.

As you know, occupations change. Many occupations that people are working in today did not exist a generation ago--for example, ecologist and physician's assistant. In the future, people will be working in occupations that do not exist today.

Now suppose I have advance information on three occupations of the future. Let's call them X, Y, and Z. You have to select one of the three to prepare for. So you want to find out how attractive or unattractive each of these three is to you. To do this, you have to tell me what you want in an occupation. Then I can give you information about the three occupations.

In other words, you can specify the things that are most important to you in choosing the best and avoiding the worst occupation. Let's call these things specifications. Each time you give me a specification, I will tell you the likelihood of satisfying it in each of the three occupations. I will record your specifications and the information here.

[Indicate Display Label.]

Suppose we were talking about cars, rather than occupations. What are your specifications for choosing the best car for yourself? What is most important to you in choosing a car?

[Give example of specifications if necessary. After student makes specifications, show him a sample answer strip. Draw parallel to occupational specifications.]

Before we begin the game, I'm going to give you a few minutes to think about your occupational specifications. Jot down the things that are most important to you in choosing an occupation--not a particular job in the occupation, but the occupation as a whole. For example a secretary could work for a bank or for the President of the United States. These are particular jobs within the occupation, secretary. In this game, we are concerned with occupations.

Do you have any questions?

[Provide paper and pencil. Give student 3 minutes.]

You will have 10 minutes to tell me your specifications and to get information. So be sure to specify those things that are most important to you in order to make the best use of your time. Use your list as a guide. Pick the things that are most important and ask about those first. You are not limited to the list.

EXHIBIT IV-11 (cont.)

PART I -- Choosing an Occupation

Phase 1

O.K., what is your first specification?

> [Student gives specification. Place strip containing specification and information under display label. Explain answer strips. "Unlikely" always means less than desired. If wording of specification differs from prepared strip, use identical extra strip. If probes are required, record them with check mark in extra spaces on recording form.]

Here is a scale on which you're going to show me how attractive you find each occupation. Each occupation has its own scale and marker.

The three markers are now at zero, indicating that you feel indifferent about the three occupations. If an occupation seems better on the basis of the information you just received, move its marker up. If it seems worse, move down. If the information makes no difference, leave the marker where it is.

You may not move the markers more than three points up or down the scale in any one move. If the information makes you feel a great deal better or worse about an occupation, you should make a big move. If not, make a small move or no move.

Do you understand? O.K., use the markers.

> [Record ratings. Periodically interpret scale position to student. Make sure you both mean the same thing.]

O.K., what is your second specification?

> [Place second answer strip on top of first.]

I'm going to place this new information on top of the old. I want you to consider this information by itself. At the end you will see all the information at once.

How much better or worse do the three occupations seem on the basis of this new information?

> [Record ratings. Repeat process until time runs out or student exhausts questions. Spread out information strips.]

Now look over all the information you have about each occupation. You may use the whole scale to show how attractive or unattractive each one is to you. You may leave the markers where they are or move any or all as you like; you are NOT limited to a three-point move.

> [Record final ratings for Phase 1. Remove answer strips. Return markers to zero.]

EXHIBIT IV-11 (cont.)

Phase 2

Now I am going to give you information that you didn't ask for. Select three of these characteristics that are most important for you to know about.

[Give the student cards for all the rewards and satisfactions (except education) not already covered. Do not include abilities or working conditions. Show the name only, not the definition. After he has selected three values, have him read the definition and make a specification.]

I want you to rate the occupations just as you have done before with a limit of three scale points per move.

[Place each answer strip on top of preceding one. Repeat scoring procedure for each characteristic.

Then spread out all three information strips and have student move markers if he wants, using the whole scale.]

Now look over these three pieces of information. You may use the whole scale to show how attractive or unattractive you find each occupation. You may move the markers now if you wish.

[Record ratings. Return markers to zero. Spread out all answer strips.]

Now you have all the information that I am going to give you about the three occupations. Consider it carefully. When you are ready, use the whole scale to show how attractive or unattractive you find each occupation.

[Record ratings.]

PART II -- Evaluation of Student's Choice

Phase 1

You have chosen the occupation which you feel is most attractive to you. Now let's find out whether you made the best choice.

Here are cards which define characteristics of occupations. They correspond to what you have seen. In addition, there are cards which you haven't had information about which many people consider to be important.

[NOTE: Include any rewards and satisfactions not previously specified. However, do not include education card unless it was specified in Phase 1. If more than one specification was made for a characteristic in Phase 1 (e.g., leisure, variety), write specification on blank card and delete typed card for sorting. Student sorts cards on basis of title; he does not read the definitions.]

EXHIBIT IV-11 (cont.)

How important is it for you to have each of these things in an occupation?

I want you to sort the cards into three piles according to how important it is for you to have a satisfactory amount or level of each of these characteristics. One pile is for the characteristics that are least important to satisfy, one for characteristics that are more important to satisfy, and one for characteristics that are most important to satisfy.

[Give student time to sort. Prepare desirability sum work sheet.]

Now I would like you to arrange the cards on this scale. Note that 8 means of greatest importance for you to satisfy and 0 means of no importance for you to satisfy. Put the cards in the pockets which show the weights you want to assign to them. You may have more than one card in a pocket. Remember, the way you sort the cards will determine whether or not you chose the right occupation.

[Give student the importance scale. Student may have no more than 2 cards in the pocket labeled 8. Record weights on desirability sum worksheet. Finish worksheet preparation.]

Phase 2 -- Feedback

1. Compute Desirability Sums (DS) for Phase 1, Phase 2, and overall. Compare with scale positions.
2. Count number of specifications and compare with those of other students.
3. Compare weights in Phase 1 with Phase 2 weights and weights of remaining values.
4. Get student reactions, answer questions.

EXHIBIT IV-12

GUIDELINES FOR ADMINISTERING SOC

Part I of Game

Most specifications that students generate will relate to characteristics for which descriptive cards and information strips have been made. (For a list of the cards and definitions of the characteristics, see Exhibit IV-4). If the relationship is not obvious, use probes to help students clarify their specifications. For example, if a student specifies "interesting work," the interviewer could ask what the student finds interesting. This could lead to a specification about interest field, variety, etc.

Whenever students make specifications which require probes, record the specifications in the boxes at the right hand side of the Phase 1 section of the SOC Recording Form (see Exhibit IV-8). Next to each specification, place a check mark for each probe required before the student's specification resembles a characteristic on the descriptive cards. Probes should be clarifying, but not leading.

If a student's specification relates to a characteristic for which there is a card and an information strip, use the prepared card and strip only if the wording is close and makes sense to the student. For example, if a student's specification is "work which involves different activities at different locations," the card and strip for "Variety" would be appropriate. However, if a student specifies number of hours per week, the card and strip for "Leisure" would be inappropriate, since "Leisure" includes vacation and freedom to choose hours as well. In this case the interviewer should use a blank information strip which has the same information as the one for leisure. Also a blank index card with the specification about hours should be used rather than the prepared card, since the definition of leisure is broader than the original specification. The card for leisure would not be presented to the student in Phase 2 and would not be sorted on the importance scale in Part II.

This built-in flexibility means that a student's language is used wherever appropriate rather than the prepared language of the game. The student assigns weights to specifications which are his, not someone else's. Possible misclassification and misunderstanding are thus avoided.

Here are some examples of specifications commonly given by students for which information cannot be given either because they are job-specific or because it is not realistic to suppose we would know these things about occupations of the future. Appropriate interviewer responses are suggested.

Interviewer says, "I cannot distinguish between X, Y, and Z on this dimension because..."

1. Benefit to Society:	...all three occupations meet your specification."
2. Physical Activity:	...all three occupations involve some physical activity and some inactivity. The exact amount depends on the specific job within the occupation."
3. Fringe Benefits:	...all three occupations offer basic benefits. Additional benefits depend on the specific job."

EXHIBIT IV-12 (cont.)

4.	Co-workers:	...all three occupations offer the opportunity to interact with co-workers. The extent and nature of the interaction depends on the specific job within the occupation."
5.	Outlook:	...outlook is the same for all three occupations."
6.	Advancement:	...often advancement involves a change of occupation (e.g., secretary to administrative assistant). One of the three occupations of the future might have the characteristics of an occupation at the top of the advancement ladder. Probe: How would advancement help you? What are some of the things you would like to get from advancement? (Possible answers: income, prestige, leadership.)

NOTE: Tell the student that since information doesn't distinguish between the three occupations, you will not give him an information strip. Be sure to record specification on SOC Recording Form.

Students also make specifications which are job-specific (e.g., getting along with co-workers or working close to home). Explain that the specification does not refer to the occupation as a whole and that no information can be given. Record the nature of the specification on the recording form.

Some specifications are made in negative terms,such as not wanting pressure on the job. Use probes to help the student state the specification in positive terms or think of other specifications which are positive.

As a general rule, do not allow subjective words like "interesting," "exciting," etc. in a specification. When such words are used, probe to find out exactly what is meant.

If a student's specification includes more than one characteristic, tell the student that you can answer in two parts or he can choose the most important one to ask about.

If the student specifies that he wants to do certain activities which he enjoys, give interest field information. If the specification has to do with level of ability required, give ability information (concepts, people, or things).

If a student's specification has to do with interest field, classify it in one of three groups and use the appropriate information strip with the student's general interest written in. The three categories are:

1. Scientific, Verbal, Administrative
2. Personal Contact
3. Technological, Artistic

EXHIBIT IV -12 (cont.)

A student may specify more than one interest field. This is fine. However, instead of using the descriptive card for Interest Field in Part II, the interviewer must write the interest fields on separate 3" x 5" cards for sorting.

If a student specifies amount of education, show him the Required Occupation Education card. Have him make the specification in terms of the definition. The education card is sorted on the importance scale in Part II only if it was specified in Part I, Phase 1. It is never included in the unsolicited information choice in Part I, Phase 2. This is because education is often seen as a means to other values and not as an occupational value. Its presence, therefore, tends to be confusing.

Part II of Game

The student uses the importance scale to sort cards representing his specification, the three characteristics chosen in Part I-Phase 2, and any extra cards representing rewards and satisfactions which were not previously selected. He does not sort the extra Ability and Working Conditions cards because their addition would make the sorting process too cumbersome and confusing.

EXHIBIT IV-13(a)

SOC RECORDING FORM

ID No. 07

Student #1 — Student's Name

9 — Grade/School

Interviewer's Name

4/29/75 — Date

PHASE I

SPECS.	Help Others (great deal)	Income (very high)	Leisure (high)	Prestige (a lot)	Education (above average)							Probes = 0	Phase 1 RATING	Phase 1 D.S.
X	0	+3	+4	+7	+9								+9	77
Y	0	-3	-3	-5	-2								-7	67
Z	+3	+4	+3	+6	+4								+7	66
CHANGE	3	7	2	8	7									
WEIGHT	8	8	7	7	5									

PHASE II

SPECS.	Security (above average)	Independence (great deal)	Int. Field (scientific)		Phase 2 RATING	Phase 2 D.S.
X	+2	-1	+2		+5	36
Y	+2	+3	0		+2	36
Z	-1	+2	+4		+4	36

Cum. D.S.	Final RATING	Ideal D.S.
113	+11	113
103	+3	103
102	+9	102

Name Student #1

EXHIBIT IV-13(b)
DESIRABILITY SUM WORKSHEET

			X		Y		Z	
	Characteristic	Student's Wt.	Instr.	Prod.	Instr.	Prod.	Instr.	Prod.
Phase 1	Help Others	8	1	8	2	16	3	24
	Income	8	3	24	1	8	2	16
	Leisure	7	2	14	3	21	1	7
	Prestige	7	3	21	1	7	2	14
	Education	5	2	10	3	15	1	5
	Phase 1 D.S.			77		67		66
Phase 2	Security	6	2	12	3	18	1	6
	Independence	6	1	6	2	12	3	18
	Int. Field - science	6	3	18	1	6	2	12
	Phase 2 D.S.			36		36		36
	Cum. D.S.			113		103		102
	Other Characteristics							
	Variety	(2)	1	–	2	–	3	–
	Leadership/Resp.	(2)	3	–	1	–	2	–
	Other D.S.			–		–		–
	Ideal D.S.	142		113		103		102

EXHIBIT IV-14(a)

SOC RECORDING FORM

ID No. 55

Student #2 — Student's Name

12 — Grade/School

Interviewer's Name

5/1/75 — Date

PHASE I

SPECS.	Leisure (average)	Security (great deal)	Income (above average)	Ability (people)								Probes = 1	Phase 1 RATING	Phase 1 D. S.
X	+1	+2	+5	+5									+8	59
Y	+3	+5	+3	+4									+5	64
Z	-1	-3	-2	-1									+2	51
CHANGE	5	5	6	2										
WEIGHT	6	8	8	7										

PHASE II

SPECS.	Variety (average)	Prestige (average)	Int. Field (science)		Phase 2 RATING	Phase 2 D. S.
X	-1	+1	+2		+5	41
Y	+2	+2	+1		+1	22
Z	+3	+5	+7		+9	39
CHANGE		4	4			

Cum. D. S.	Final RATING	Ideal D. S.
100	+12	122
86	-3	110
90	+6	128

Name Student #2

EXHIBIT IV-14(b)

DESIRABILITY SUM WORKSHEET

			X		Y		Z	
	Characteristic	Student's Wt.	Instr.	Prod.	Instr.	Prod.	Instr.	Prod.
Phase 1	Leisure	6	2	12	3	18	1	6
	Security	8	2	16	3	24	1	8
	Income	8	3	24	1	8	2	16
	Ability-people	7	1	7	2	14	3	21
	Phase 1 D.S.		▨	59	▨	64	▨	51

Phase 2	Variety	5	1	5	2	10	3	15
	Prestige	5	3	15	1	5	2	10
	Int. Field-science	7	3	21	1	7	2	14
	Phase 2 D.S.		▨	41	▨	22	▨	39
	Cum. D.S.		▨	100	▨	86	▨	90

Other Characteristics							
Independence	4	1	4	2	8	3	12
Help Others	6	1	6	2	12	3	18
Leadership/Resp	4	3	12	1	4	2	8
Other D.S.		▨	22	▨	24	▨	38
Ideal D.S.	144	▨	122	▨	110	▨	128

EXHIBIT IV-15(a)

SOC RECORDING FORM

ID No. 34

Student #3
Student's Name

12
Grade/School

Interviewer's Name

5/7/75
Date

PHASE I

SPECS.	Variety (above average)	Income (average)	Ability-Mechanical	Ability-Concepts								Probes = 8	Phase 1 RATING	Phase 1 D. S.
X	-1	+2	+2	+4									-6	25
Y	0	-3	-1	-4									-12	20
Z	+3	+2	+1	+2									+9	33
CHANGE	4	7	3	6										
WEIGHT	7	6	0	1										

PHASE II

SPECS.	Int. Field (pers. contact)	Security (above average)	Independence (average)		Phase 2 RATING	Phase 2 D. S.
X	-1	+1	-2		-6	31
Y	+3	+5	+3		+6	54
Z	+3	0	+3		-3	53
CHANGE	7	7	8			

Cum. D. S.	Final RATING	Ideal D. S.
56	-12	76
74	+7	90
86	+10	98

Name Student #3

EXHIBIT IV-15(b)
DESIRABILITY SUM WORKSHEET

			X		Y		Z	
	Characteristic	Student's Wt.	Instr.	Prod.	Instr.	Prod.	Instr.	Prod.
Phase 1	Variety	7	1	7	2	14	3	21
	Income	6	3	18	1	6	2	12
	Ability-Mech.	(0)	2	-	3	-	1	-
	Ability-Concepts	(1)	3	-	1	-	2	-
	Phase 1 D.S.			25		20		33
Phase 2	Int. Field-Personal Contact	8	1	8	2	16	3	24
	Security	8	2	16	3	24	1	8
	Independence	7	1	7	2	14	3	21
	Phase 2 D.S.			31		54		53
	Cum. D.S.			56		74		86
	Other Characteristics							
	Prestige	4	3	12	1	4	2	8
	Leisure	4	2	8	3	12	1	4
	Other D.S.			20		16		12
	Ideal D.S.	143		76		90		98

CHAPTER V

SOC ADMINISTRATION (FALL 1975)

The Spring 1975 administration of SOC brought us much closer to a resolution of the problem of measuring competency in career decision-making. However, questions still remained concerning procedures and measures, as described at the end of the last chapter. No further field tests were planned, but since SOC was being used in conjunction with another project, it was once again revised and administered, this time to college rather than high school students.

Description of Sample

SOC was administered to 27 freshmen at a 4-year college in conjunction with another project designed to evaluate the computer-based System of Interactive Guidance and Information (SIGI) which was in use at the school. Students were divided into experimental and control groups. The experimental group consisted of 15 students who had used SIGI as part of a course in career decision-making. The control group, 12 students, planned to take the course and use SIGI, but had not yet done so. Unfortunately, it was impossible, over the duration of the treatment, to avoid contamination of the control group. They sometimes looked over shoulders of friends using SIGI and discussed the treatment with them.

Revision of SOC Procedures and Materials

The following changes were made after the Spring 1975 administration.

The SOC procedure was divided into four phases rather than two parts with two phases each. This was done for ease of reference.

The initial instructions to the student were shortened in order to highlight a few important concepts. Other directions were given in the course of playing the game. This saved administration time and made procedures easier for students to follow.

The 10-minute time limit for making specifications was abolished so that students could generate lists of all their important specifications. Students were told not to name unimportant characteristics of occupations.

Students were no longer asked to specify the level or amount of the characteristic desired. Instead, the information ("very likely," "possible," or "very unlikely") referred to the level they had in mind. This eliminated an unnecessary step in making specifications and also saved time.

Names of characteristics were not pre-printed on information strips. Specifications were recorded in the student's own words, both on the information strips and the descriptive cards. Prepared cards were used for Phase 1 specifications only when the student's words were the same as those on the cards. Thus, each card and information strip was readily meaningful to the student.

After students made all of their specifications and rated the occupations, they were asked to identify the descriptive cards which corresponded to their specifications. The interviewer no longer had to decide what students' specifications meant; the students themselves decided whether a previously prepared card coincided with one of their specifications.

The number of probes (N PROBES) was no longer recorded in this administration of SOC because it did not seem feasible to develop guidelines for making probes which would guarantee uniformity across interviewers. Also, probes were used less frequently because specifications were recorded in the student's own words rather than in a pre-arranged form. Therefore, as long as the specification was meaningful for the student, it was not necessary that the interviewer fully understand it.

The descriptive card for early entry was no longer used. Students were free to specify level of education in Phase 1, but it was felt that the concept of early entry was too confusing to present to students in a later phase.

Movement on the attractiveness scale was no longer restricted to moves of ±3. Students could place discs anywhere on the scale throughout the game. Greater movement allowed for greater variety of response so that students could differentiate between information of varying importance. The scale was also shortened by 5 points, top and bottom, to run from +10 to -10.

Two labels were added to the attractiveness scale to anchor the extremes. The top of the scale was labeled "the greatest" and the bottom "the worst." Thus, even though marker movement was unrestricted, the top and bottom of the scale were reserved for extreme reactions.

In order to save time, the desirability sum worksheet was no longer used in giving feedback to students about their performance. The other elements of the feedback session were retained.

The SOC Recording Form was simplified and shortened in various ways. (See Exhibits V-1, 2, 3.) These changes made it easier for the interviewer to give feedback to students. (For the revised SOC Script, Fall 1975, see Exhibit V-4.)

SOC Measures

The measures TOP VAL, W 1/2, N SPECS, and AV CH 1/2 were computed as in the Spring 1975 administration. The number of probes (N PROBES) was dropped because of difficulties in attempting to standardize procedures for how and when to probe. The average weight assigned to Phase 2 specifications relative to weights assigned to characteristics not selected (W 2/3) was dropped and replaced by $\overline{W}$ 3, i.e., the average weight assigned to unchosen characteristics.

In place of the WT-CH measure to describe the correspondence between weights assigned to specifications and marker movement, a correlation was computed between the two. In computing the correlation, the weights were first converted to standard scores. Marker movement for each specification was measured as the difference between the high and low rating. The correlation r' was based on Phase 1 data; r'' was based on Phase 1 plus Phase 2 data. The measure r' was not computed if the number of specifications was less than 4.

A new RAT-DS was computed. For the sake of simplicity, desirability sums (DS's) were computed using all characteristics, even those weighted less than 4, since use or omission of these items appeared to make no appreciable difference. As before, desirability sums were rescaled by dividing them by the sum of the weights. They were then placed on a scale from 1 to 3 and forced into a fixed sum of 6. The end parts of the DS scale were equated to those of the attractiveness scale (-10 to +10). Then expected positions on the attractiveness scale were computed on the basis of the rescaled desirability sums. The discrepancy between the actual and expected position on the attractiveness scale was calculated for each occupation and summed across the three to give the measures RAT-DS'and RAT-DS". RAT-DS' refers to ratings at the end of Phase 1; RAT-DS" refers to ratings at the end of the game. To check the relationship between ratings and rescaled DS's, a correlation between the two was computed across all students. At the end of Phase 1 the correlation was .74; at the end of the game the correlation was .69.

Experimental and Control Group Differences

Table V-1 gives the means and standard deviations of the SOC measures for the experimental and control groups (N = 15 and 12, respectively). Also provided are the percentages of students selecting the occupation with the highest desirability at the end of Phase 1 and at the end of the game.

While the difference between the means of the experimental and control groups was not significant at the five percent level on any of the SOC measures, it was encouraging to note that the differences did tend to favor the experimentals on TOP VAL, N SPECS, W 3, RAT-DS', RAT-DS", and r". The r' and r" measures were squared and averaged to provide an overall index of determination; i.e., the percent variance accounted for. While wide variation across students was noted on all scales, as evinced by the magnitude of the standard deviations, no large group differences were found.

That the differences between group means for these measures failed to reach statistical significance is attributable to the grossness of the measures, the small sample size, and contamination of the controls. Further, the structure of the game itself may have tended to diminish the variation of some of the measures. In revising SOC, we had tightened up the structure of the game, forcing all students to exhibit whatever good decision-making behaviors they had while diminishing opportunities to display poor decision-making behaviors. Students were told what to do--to consider dimensions that were important and evaluate the relevance of these factors for three occupational alternatives. Further, to justify use of the W 1/2 measure (in which a high score is achieved by omitting other than important considerations), students were advised to concentrate on important things first (during Phase 1), leaving the less important characteristics to be considered later in the game. While these directions to the student were necessary to insure a good simulation, the end result was to have the structure of the game bring all students up to a level where they exhibited considerable competence in career decision-making. This was borne out by the ceiling effect on our measures (and a "floor effect" on inverted scales such as W 3),as seen in Table V-1. Note that the group means for both experimentals and controls tended to be high (e.g., TOP VAL > 2 and N SPECS > 5, etc.) Further, the smaller standard deviation of the experimental group on all measures indicated that they were being affected by the ceiling more than the control group.

Even though differences between RAT-DS' and RAT-DS" for experimentals and controls were not significant, we would expect that as we learn more about these measures they will help us make finer distinctions between students than whether they had or had not chosen the occupation with the highest DS. That this sort of reference is necessary is seen from Table V-1, showing that all of the experimentals and all but one of the controls were able to select the highest DS occupations. Correct choice, in other words, is not the whole story. We need measures which describe how students synthesize information and relate it to the evaluation of occupational attractiveness.

TABLE V-1

MEANS AND STANDARD DEVIATIONS OF SOC MEASURES, FALL 1975

(N=27, College Freshmen)

	$\overline{X}$		S.D.	
	Exp.	Con.	Exp.	Con.
TOP VAL	2.5	2.2	0.5	0.8
W 1/2	1.6	1.6	1.1	1.8
N SPECS	5.5	5.2	1.3	1.6
$\overline{W}$ 3	1.8	2.4	1.5	2.1
AV CH 1/2	1.2	1.2	0.4	0.4
RAT-DS'	9.1	9.2	4.0	4.3
RAT-DS"	8.5	9.5	4.8	3.5
$(r')^2$	.45	.47	--	--
$(r")^2$	.50	.41	--	--

Percent Choosing Occupation with Highest DS at:

	Experimental (N = 15)	Control (N = 12)
(1) End Phase 1	100% (15)	92% (11)
(2) Final	100% (15)	92% (11)

Despite our failure to see statistically significant group differences on our SOC measures, we came away from this latest administration convinced that differences in behavior did exist. We did not systematically record these behaviors and are thus forced to provide a subjective retelling of what we observed.

It was our impression that the experimentals took less time to state their specifications, that they stated them more clearly, and that they felt more confident about what they said and did. The relevance of the time element is not clear, particularly since a past administration which imposed a time limit seemed to reduce the variation in N SPECS. The clarity of specifications was previously measured by N PROBES. As already stated, this measure was dropped owing to difficulties in standardizing procedures for when and how to probe. This may have been a mistake on our part. What is clearly needed is a simple and direct way of measuring how well a student can transmit an informational need to an information-giving source. Obviously, this is a mammoth undertaking in its own right. For now, we might find it advisable to return to the use of the N PROBES measure, while continuing to improve procedures for standardizing administrators' behavior.

Students' confidence manifested itself in several ways. At the most obvious level, there was the amount of squirming and agonizing a student did. Aside from this, we found that the experimentals seemed to be more certain of their weights and ratings. Not only did they tend to take less time with these tasks, but there seemed to be less indecision on their part about where to place the markers and where to put the specification cards along the scale. Unfortunately, our previous experience indicated that having students rate their confidence levels was not feasible. And while the idea of tapping this dimension still seems good, we can see no way to do so within the framework of the SOC game.

Yet another difference in behavior noted between the experimentals and controls was the way each of the groups combined conflicting items of information to reach a final decision and make final ratings of occupations. The experimentals frequently ordered the information strips according to the importance attached to the dimension named on the strip. Some of the students went a step further by applying a system of weights to the strips. Following the model presented in SIGI, they computed desirability sums for each of the occupations The controls, on the other hand, were more likely to line up information strips with as many "very likely" responses in one column as possible, without regard to the importance of the dimension. Obviously, none of the controls attempted to compute desirability sums. Consistent with the differences in approach to combining information were differences in attitude toward the task and confidence in the final assessment. Experimentals seemed to have a strategy for coping with the problem; they agonized less and seemed more assured of their final ratings.

In short, what seems to have happened in this saga of SOC is that procedures have become progressively more structured. In its early form, SOC was relatively open-ended and difficult for secondary school students. By criterion-referenced standards, their performance tended to be poor. They left with a recognition that deficiencies in CDM competencies had been identified and defined by SOC, and they expressed resolve to take remedial action (e.g., "I have to do a lot more thinking about my values"). In its latest, more structured manifestation, SOC was relatively easy for the sample of college students, guiding them through a well-ordered and logical sequence of tasks so that they learned CDM competencies "on-line." By instructing these students as they went through it, SOC raised the performance of the control group. But the experimental group was held down by a ceiling effect, evidenced by mean scores that could hardly be exceeded in criterion-referenced terms and by standard deviations lower than those of the control group.

Although this ceiling phenomenon in a small sample of college students kept group differences below those that would be required to meet the convention represented by the five percent level, we have nevertheless found analysis of individual scores in criterion-referenced terms quite revealing for diagnosis of strengths and deficiencies in CDM competencies.

Profiles of Representative Students

To illustrate the ways in which SOC scores shed light on individual students' strengths and weaknesses in career decision-making, records of three students are presented and interpreted below. (See Exhibits V-1 through V-3.) Profiles of scores derived from these records are presented in Table V-2. A discussion of these profiles follows.

Student #1 (Exhibit V-1). This student showed up as a good career decision-maker on all of the SOC measures. In Phase 1 she named a large number of occupational characteristics (N SPECS = 7), including all three of her top-weighted values (TOP VAL = 3). In addition to being able to name specifications, Student #1 demonstrated her ability to discriminate between them. The characteristics which she herself generated were viewed as more important than the ones selected in Phase 2 (W 1/2 = 5.3). Furthermore, she assigned a wide range of weights to indicate the importance of the different characteristics (from a low of 0 to a high of 8). By the end of Phase 2, Student #1 had covered all of the occupational characteristics included in the game, leaving W 3 = 0. These scores indicated that she knew her values and could express clearly what she wanted in an occupation.

Student #1 also seemed to understand the correspondence between how important a specification was and how this figured into making an occupation more or less attractive. Her scores showed high correlations between specification weights and marker movements for Phase 1 (r' = .58) and for Phases 1 and 2 combined (r" = .90). In other words, she tended to make larger moves when responding to specifications which were of greatest importance to her and smaller moves for information that was of less importance.

Student #1's ability to use the information at hand to make logical career decisions was also reflected in her AV CH 1/2 score of 1.3. The moves she made in Phase 1 (in response to specifications which she had identified as being important) were larger than those made in Phase 2.

Finally, Student #1 had a low score (3) on the RAT-DS' measure, meaning that there was very close agreement between desirability sums and ratings for each of the three occupations at the end of Phase 1. A low score on this measure indicates that Student #1 was able to combine information and evaluate occupations so as to determine each occupation's potential for satisfying her needs. And in her final rating of occupations, Student #1 chose the one with the highest desirability sum. But the RAT-DS" of 10 shows that this ability did not hold up so well at that point. She apparently allowed herself to be distracted by Phase 2 information, in rating occupation X, even though the information concerned three dimensions that she held to be of little or no importance (weights of 2, 1, and 0). Thus, X logically should have continued to have a negative rating, lower than 2, rather than intermediate between Y (which maintained top rank) and Z. Perhaps students are less concerned with getting second- and third-place ratings quite right than with choosing the top-rated occupation.

Other than that one slip, Student #1 demonstrated the behaviors of a very competent career decision-maker. She knew her values and was able to generate a large number of important occupational specifications; she was able to discriminate between these specifications, assigning a wide range of weights to them; she applied the information she received about occupations in a logical manner; and she selected the occupation having the highest desirability.

Student #2 (Exhibit V-2). SOC measures indicated that this student was less competent in career decision-making than Student #1. Although she made a high number of specifications (N SPECS = 6) which included two of her three top-weighted values (TOP VAL = 2), there was little variation in the weights she assigned to values. Apparently Student #2 was unable to identify the values which were most important to her. This was borne out by her W 1/2 score of 1 which meant that the average weights in Phases 1 and 2 were virtually the same. The one value which was not selected in Phase 2, leadership, was assigned a weight of 6 (W 3 = 6), a weight which was higher than some assigned to Phase 1 and 2 values.

This lack of ability to discriminate between occupational values was accompanied by a uniform response set on the attractiveness scale to information about each value. Invariably Student #2 moved to +8 for "very likely," +5 for "possible," and -8 for "very unlikely." Her scores showed no correlation between weights assigned to values and marker movement for Phase 1 (r' = 0) or for Phases 1 and 2 combined (r" = 0). In other words, a difference of one or two points on the importance scale did not translate itself into a difference on the attractiveness scale. Also, because the average weights assigned to Phase 1 and Phase 2 values were the same, the marker movement in the two phases was the same (AV CH 1/2 = 1.0).

Although Student #2 selected the occupation with the highest DS at the end of Phase 1 and the end of the game, her high RAT-DS scores showed a relatively lower agreement between her ratings and the desirability sums for the three occupations (RAT-DS' = 23; RAT-DS" = 18). She was not able to combine information effectively in order to evaluate occupations, primarily because her values were undifferentiated and unclarified.

TABLE V-2

SOC SCORES FOR STUDENTS IN THE FALL 1975 ADMINISTRATION

SOC Measures	Students #1	#2	#3
TOP VAL	3	2	2
W 1/2	5.3	1	1.2
N SPECS	7	6	4
$\overline{W}$ 3	0	6	2.5
AV CH 1/2	1.3	1.0	1.1
RAT-DS'	3	23	6
RAT-DS"	10	18	2
r'	.58	0	.90
r"	.90	0	.90
CORRECT CHOICE			
End Phase 1	Y	Y	Y
End Phase 3	Y	Y	Y

Student #3 (Exhibit V-3). Student #3 had a good idea of what was important to him in choosing an occupation. Although he failed to mention his top-weighted value in Phase 1, he did name four important occupational characteristics (N SPECS = 4), including his other two top values (TOP VAL = 2). His W 1/2 score of 1.2 showed that, in general, he specified the most important characteristics in Phase 1. Specifications which were not selected were of little importance to him ($\overline{W}$ 3 = 2.5). Student #3's ability to differentiate between occupational characteristics was shown by large variation in weights assigned to the different values.

This student also knew how to apply the information he received. His AV CH 1/2 score of 1.1 indicated that he made somewhat larger moves in Phase 1 than in Phase 2. This made sense, since Phase 1 specifications were the ones he had identified as being most important to him. Also, the biggest move he made was for the characteristic with the highest weight (interest field, weighted 8). Correlations between marker movements and specification weights were extremely high (r' = .90; r'' = .90), reflecting his understanding of the relationship between points on the attractiveness scale and weights assigned to occupational characteristics.

Low scores on the RAT-DS measures (RAT-DS' = 6; RAT-DS" = 2) provided another indication of Student #3's ability to use information logically. There was very little discrepancy between computed desirability sums and his ratings at the end of Phases 1 and 3. In all three phases he chose the occupation with the highest desirability sum.

EXHIBIT V-1

SOC RECORDING FORM

ID No. 4

Student #1
Student's Name

Grade/School

Interviewer's Name

Date

PHASE 1

WT.	5	3	4	6	8	4			
SPECS.	Early Entry 2-3-1	Income 3-1-2	Int. Field 2-3-1	Help Others 1-2-3	Independence 1-2-3	Leisure 2-3-1			
X	+1	+3	+3	-3	-3	+3			
Y	+3	-3	+4	+3	+3	+5			
Z	-3	+2	-3	+5	+5	-4			

PHASE 2

2	1	0
Security 2-3-1	Prestige 3-1-2	Leadership 3-1-2
+2	+3	+4
+4	-2	-2
-2	+2	+2

OTHER CHARACTERISTICS	WT.
none	

FINAL RATINGS

	PHASE 1	PHASE 2	PHASE 3
X	-5	+6	+2
Y	+6	+2	+4
Z	+2	+2	-1

EXHIBIT V-2

SOC RECORDING FORM

ID No. 18

Student #2
Student's Name

Grade/School

Interviewer's Name

Date

PHASE 1

WT.	8	7	7	7	5	6			
S P E C S.	Income 3-1-2	Prestige 3-1-2	Independence 1-2-3	Leisure 2-3-1	Variety 1-2-3	Meet others 1-2-3			
X	+8	+8	-8	+5	-8	-8			
Y	-8	-8	+5	+8	+5	+5			
Z	+5	+5	+8	-8	+8	+8			

PHASE 2

7	8	5
Help Others 1-2-3	Int. Field 3-1-2	Security 2-3-1
-8	+8	+5
+5	-8	+8
+8	+5	-8

OTHER CHARACTERISTICS	WT.
Leadership	6

FINAL RATINGS

	PHASE 1	PHASE 2	PHASE 3
X	+5	+8	+6
Y	+4	+4	+4
Z	+8	+6	+8

EXHIBIT V-3

ID No. 9

SOC RECORDING FORM

Student #3
Student's Name

Grade/School

Interviewer's Name

Date

PHASE 1

WT.	5	6	4	5					
S P E C S.	Help others 1-2-3	Income 3-1-2	Leisure 2-3-1	Security 2-3-1					
X	0	+5	+3	+2					
Y	+5	-6	+5	+4					
Z	+6	+3	0	-2					

PHASE 2

2	2	8
Independence 1-2-3	Variety 1-2-3	Int. Field 3-1-2
0	-4	+8
+1	0	-4
+2	+1	+4

OTHER CHARACTERISTICS	WT.
Leadership	3
Prestige	2

FINAL RATINGS

	PHASE 1	PHASE 2	PHASE 3
X	0	4	4
Y	+3	-3	-3
Z	+2	+6	+1

EXHIBIT V-4

SOC DIRECTIONS -- FALL 1975

We're going to play a game designed to test how good you are at making career decisions.

Suppose I have advance information on three occupations of the future. Let's call them X, Y, and Z. The purpose of the game is to select one of the three to prepare for. So you want to find out how attractive or unattractive each of these three is to you. To do this, you have to tell me what you want in an occupation. Then I can tell you how likely it is that X, Y, or Z will meet your specification.

As I've said, these are occupations of the future, so don't assume that they will correspond to occupations that you are familiar with. Specify the things that are most important to you in choosing the best and avoiding the worst occupation.

To make this clearer, suppose we were talking about cars, rather than occupations. What are your specifications for choosing the best car for yourself? What is most important to you in choosing a car?

[Give examples of specifications if necessary. Draw parallel to occupational specifications.]

Before we begin the game, I'm going to give you a few minutes to think about your occupational specifications. Jot down the things that are most important to you in choosing an occupation.

Do you have any questions?

[Provide paper and pencil. Give student 3 minutes.]

Look at your list. Select the most important things and specify them first.

Phase 1

O.K., what is your first specification?

[Student gives specification. Select information strip which corresponds to distribution on prepared strips. Write subject of specification in student's words. Information tells the likelihood of obtaining a satisfactory amount or level of the characteristic, according to student's definition of satisfactory. If specification is job-specific or subjective, explain this to the student.]

Here is a scale on which you're going to show me how attractive you find each occupation. Each occupation has its own scale and marker.

The three markers are now at zero, indicating that you feel indifferent about the three occupations. If an occupation seems better on the basis of the information you just received, move its marker up. If it seems worse, move it down. If the information makes no difference, leave the marker where it is. Notice that the scale runs from +10 to -10. The top of the scale represents the best occupation you can think of; the bottom represents the worst.

Do you understand? O.K., use the markers.

EXHIBIT V-4 (cont.)

[Record ratings. Periodically interpret scale position to student. Make sure you both mean the same thing.]

O.K., what is your second specification?

[Place second answer strip on top of first.]

I'm going to place this new information on top of the old. I want you to consider this information by itself. At the end you will see all the information at once.

[Return markers to zero.]

How much better or worse do the three occupations seem on the basis of this new information?

[Record ratings. Get next spec. Return markers to zero. Repeat process until student exhausts specifications. If the student reaches six specifications, tell him that he may specify two more things before time runs out.]

[When process is finished, spread out information strips.]

Now look over all the information you have about each occupation. Move the markers to show how attractive or unattractive each one is to you.

[While the student is doing this, write his specs. on blank cards.] Record final ratings for Phase 1. Return markers to zero. Leave info. strips in place for student to refer to.]

Phase 2

Now I am going to give you cards representing characteristics that you may or may not have specified. While I prepare for the next part, I'd like you to sort the cards into two piles: one for characteristics that you've specified already and one for characteristics that you haven't specified. You may refer to the definition on the back if you wish.

[Set aside cards of characteristics that student has specified. Remove answer strips from Phase 1.]

Of the cards that are left, I'd like you to select three characteristics that are most important for you to know about.

[Give information strips for each characteristic. Repeat procedure as before. Then spread out all three information strips for an overall rating.]

Phase 3

[Spread out all information strips from Phases 1 and 2.]

Now you have all the information that I am going to give you about the three occupations. Consider it carefully. You may move the strips in any way that makes it clearer for you. When you are ready, use the scale to show how attractive or unattractive you find each occupation.

[Record ratings.]

EXHIBIT V-4 (cont.)

Phase 4

Here are cards which define characteristics of occupations. They include all the characteristics you specified and chose as well as the ones you didn't choose. How important is it for you to have each of these things in an occupation?

I would like you to arrange the cards on this scale. Note that 8 means of greatest importance and 0 means of no importance. Put the cards in the pockets which show how important it is for you to have a satisfactory amount or level of each of these characteristics.

[Record student's weights. This is the end of the game. Give student feedback about number of characteristics specified in Phase 1; relative weights of Phase 1, 2, and 3 characteristics, and change in ratings from Phase 1 to Phase 3.]

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The Problem

A longstanding problem in career development and guidance has been the absence of a good instrument to measure competencies in career decision-making (CDM). Previous attempts to develop such measures have taken the form of inventories, questionnaires, and multiple-choice tests that purport to tap attitudes towards CDM, understanding of concepts and principles, knowledge of occupational information, and reasoning about decisions (or, more precisely, the ability to select "correct" answers to problems involving hypothetical "cases"). But the operations elicited by the items are often remote from the titles under which the items are categorized. Furthermore, none of these instruments calls for the student to apply his attitudes, understandings, knowledge, and reasoning to career decision-making in his own identity. None engages him in the CDM process as himself, making his own choices. None evokes or observes behavior based on his own values. Consequently, none provides a window on the career decision-making process in action. Indeed, none is based on an explicit theory of that process: none spells out the logic and sequence whereby the putative components of CDM interact.

Rationale for Simulated Occupational Choice

This report traces the development of a standardized but individually administered simulation exercise, called Simulated Occupational Choice (SOC), to measure competencies in the process of CDM.

It is based on the premise that such competencies clearly involve information-processing: A competent decision-maker should be able to specify what information he needs, should be able to get the information he wants, and should be able to use the information he has.

SOC was designed to elicit such behavioral processes in a CDM context and to provide means of observing, recording, and scoring them in ways that would be meaningful, particularly for individual diagnosis.

Other uses envisioned for SOC were to serve as a criterion for validation of group-administered tests or for evaluation of a guidance program or treatment. The simulation exercise may also be used for instructional purposes with individuals or groups--for example, as the nucleus for a course in CDM.

Development and Tryouts

During a two-year period, three successive forms of SOC were constructed and tried out with secondary school students, and a fourth version was later used with a sample of college students. Some of the revisions were made to simplify and clarify procedures and materials so that the instrument could be administered by people with very little training, administration time could be kept within 30 to 45 minutes per student, and observations could be readily recorded and quickly converted into scores. Other revisions re-structured the tasks to eliminate unwanted stylistic variance from student behaviors, to make observations bear more directly on the competencies being assessed, and to derive scores that would be more meaningful for individual diagnosis.

In the very first form of SOC, students were given the task of choosing which one of three unnamed occupations would suit them best. Starting with no information, the student was instructed to ask the questions that would produce information most helpful in choosing an occupation. As the administrator provided answers to each question, the student moved markers along a scale to show how he then rated each occupation. After five questions and answers, the student was then allowed to ask additional questions, following the same procedure of rating occupations and eventually assigning a confidence estimate to the choice when all of his questions were exhausted. Finally, the student was shown a list of kinds of information available; he selected from this list the additional information he would want to see before making his choice of the occupation that would suit him best, rated the occupations on each bit of information, made his choice in the light of all the information he had obtained, and assigned a confidence estimate to this final choice. Names of the occupations were then revealed, and the student was encouraged to discuss his choice, the process he had followed, and an evaluation of his performance.

The first field test (Spring 1974), using 39 ninth-graders and 34 twelfth-graders, immediately demonstrated the virtues of this form of SOC: the verisimilitude of the simulation, its evocation of complex and lifelike behaviors, the face validity of the tasks, the focus on the students' own constructs, the opportunity to ask questions freely, the immediate responsiveness of the data base to such questions, and the instant feedback upon completion of the exercise, all served to keep student interest and motivation high. Students were highly involved in the game, visibly enjoyed it, followed it with many questions about their own actual career decision-making and tentative choices, and appeared to learn from the experience.

At the same time, the scores obtained from these operations were obviously unsatisfactory: they represented an effort to pack into summary form rather complex chains of interactive behavior. Attempts to interpret the scores in either evaluative or diagnostic terms revealed flaws in the reasoning by which they were derived.

The second field test (Fall 1974) involved 38 ninth-graders and 34 twelfth-graders. The revisions undertaken to get better scores made administration of this version of SOC much more complex and cumbersome than its predecessor. Yet analyses indicated that students still tended to behave in a thoughtful and essentially logical way. (For description of procedures and materials, see pp. 38-47.) Analysis of the findings, however, led to new discoveries of ambiguities inherent in the procedures. For instance, when students asked questions to solicit information about a set of occupations, the significance of a given response varied across students. To cite a simple example, an annual income of $12,000 seemed high to some students, low to others. Not only were there different points of view, but along some dimensions (e.g., leisure) a medium return tended to be perceived consistently as warranting a more favorable rating than a high return. Thus, while high, medium, and low positions along some dimensions of occupational characteristics clearly "scale" (e.g., in the sense that more money is generally preferable to less), others do not. When a student asks a question about such dimensions as leisure and responsibility, it is not instantly apparent whether a high, medium, or low level is preferred. The impact of such individual differences muddied the interpretation of responses and scores.

Consequently, in the third field test (Spring 1975), involving 30 ninth-graders and 30 twelfth-graders, students made "specifications," stating what was desirable to them, rather than asking questions to solicit information. Administrators' responses indicated the likelihood that each of the three occupations would meet a specification made by students. (For a description of procedures, see pp. 80-83.) The three occupations in this version were designated as "occupations of the future," so that students would not be tempted to try to guess the names of the occupations or to assume that certain characteristics perforce go together. Again, students moved markers along a scale for each occupation to show the impact of each bit of information taken separately and also the impact of the entire configuration of information at different stages. One set of information was provided in response to specifications generated by students; another set was in response to characteristics selected by students from a residual pool. Students also assigned numerical weights to each characteristic (generated, selected, or residual) to show its relative importance to him.

The new procedures and directions simplified administration of SOC considerably. A greater variety of scores were defined to reflect operational definitions of the various CDM competencies identified and thus to provide fuller diagnostic interpretation. (For a description of the measures, see pp. 94-96.) Perhaps the most important outcome of this field trial was the development of models for diagnostic interpretation of scores. These models were illustrated with specific cases, presented to serve as guidelines for counselors or other users (see pp. 100-105). Such diagnostic analyses showed considerable power in recapitulating and characterizing differences in students' behavior, illuminating both competencies and deficiencies of individual students in CDM. They also tended to highlight, however, some of the remaining problems in procedures and scores.

One such problem was the mixture of characteristics of the various scales: some were criterion-referenced, others norm-referenced; some were continuous, others dichotomized; some were independent, others linked; and so on. The complex interactions between scores tends particularly to cloud inter-group or inter-individual comparisons. Because the exercise is responsive to individuals' unique input, performance in one category of competence at one stage of the exercise may often depend on conditions generated by performance at a previous stage. Thus, the information on which different students base their decisions is variable. This is realistic and lifelike, but presents a problem for comparisons across persons, since some students face easier decisions than others.

These problems, although alleviated somewhat in the latest revision, support the emphasis on use of SOC for intra-individual analyses. A given score is much more meaningful when viewed in the context of other SOC scores obtained by the same student than when extracted from that context for comparison between students.

The most recent version of SOC (as of this writing) was administered in Fall 1975 to a small sample of college students comprised of 15 "experimentals," who had received a guidance "treatment," and 12 "controls." (Revisions in procedures are described in pp. 135-136, and scores are described in pp. 136-137.) Differences between these small samples tended to be in the predicted direction, but did not reach the five per cent level of significance, mainly because of a "ceiling effect" on the scores of the experimental group. Nevertheless, analysis of individual scores in criterion-referenced terms again provided remarkable diagnostic insights into students' strengths and deficiencies in the CDM process.

Importance of Diagnostic Measures

It seems worth underlining the diagnostic capabilities of SOC, since diagnosis represents the proudest purpose of measurement in education, and also the least practiced. A good diagnostic measure should at least imply guidelines for remedial action, and at best incorporate remedial instruction in the very process of measurement.

To accomplish such a goal, diagnosis depends, ultimately, on a distinct theory concerning the structure of the competencies to be learned, the logical connections between them, and the sequence in which they are applied. Thus, it is based on a series of linked premises: some outcome--in this case, wisdom in CDM--is the product of a number of components; each component makes a contribution that can be identified, defined, and measured; a deficiency in any one component, or in an interface between components, is an obstacle to an individual's progress toward wisdom in CDM. Recognition of an obstacle can then lead to remedial action, or may in itself be the beginning of remedial action.

Indeed, as an integral part of the administration of SOC, students who had just completed the exercise were briefed on the discrepancies between their behavior and an ideal of logically consistent and effective behavior in CDM. If, for example, they had given higher weights to characteristics selected in Phase 2, or to residual characteristics, than to the specifications they had initiated in Phase 1, they quickly recognized that they had been deficient in explicit awareness of their own values. This recognition in itself started them one giant step toward values clarification: "I hadn't even thought of security, and yet that turned out to be most important thing to me in choosing an occupation in SOC." Or if their final ratings were not consistent with desirability sums for the three occupations, they realized they had been deficient in sorting out, manipulating, and interpreting a mass of information. But what is more, they also realized that in the computation of desirability sums, they had been handed a paradigm which they themselves could use in processing information of this kind in the future. Thus, the SOC measures do not merely indicate status. They point to actions that can be taken and they can start students on an instructional path.

Recommendations for Further Research, Development, and Application

Group Instruction. Certainly, efforts should be made to capitalize on this usefulness for instruction that has been demonstrated in administrations of SOC. Instructional use need not be confined to one student at a time. Although group administration of SOC to furnish scores for individuals is not feasible, group administration for instruction seems well worth trying. Very few modifications would be required. The structure of the simulation could be retained for formal classroom use. Materials would have to be enlarged to be visible. Then a mixture of collective or consensual responses and illustrative individual responses could be elicited from the entire group of students. The results could be interpreted and evaluated in group discussion, perhaps followed by written critiques by the class members.

Individual Counseling. The current form of SOC can also be made available to counselors for exploratory use with individual students. Counselor judgments can be made as to whether the diagnostic interpretations provided by SOC are consistent with other observations of a student's status in CDM. Even more important, counselors can judge how helpful the diagnostic scores are in counseling each student: do such diagnostic interpretations lead readily to remedial action and to subsequent progress toward greater wisdom in CDM?

Group Comparisons. Notwithstanding the emphasis on diagnosis, additional studies comparing treatment and control groups or other groups presumed to differ in CDM competencies, should be undertaken. The very small and poorly controlled study included in this report (although not supported by the project grant) points up some of the already well known difficulties in controlling field studies. Nevertheless, appropriate situations for larger and better controlled projects can be identified or established, if time and money enough are available. A small series of such studies may help determine more clearly the sensitivity of SOC scores in differentiating between groups. Once evidence of the validity of SOC for this purpose has been demonstrated, even though administration to very large numbers is not feasible, careful application of well known sampling techniques would enable SOC to be used as a criterion measure for evaluating treatments or programs.

Relationships with Other Measures. Prior to widespread use of SOC as a criterion measure, it would seem appropriate and timely to investigate empirically the relationships between SOC and other tests that purport to measure CDM competencies. Instruments such as those mentioned in the first chapter of this report (e.g., those developed by Crites, Westbrook, and various others) should be administered along with SOC to samples of students whose scores on some marker test of cognitive abilities (such as verbal aptitude) are already available. As a step toward developing a taxonomy of tests of CDM competencies, it would be important to find out to what extent these various measures converge with one another and with the marker test. If SOC can be regarded as a "better" criterion than the group-administered tests, the partial correlation between each group test and SOC (independent of the marker variable) might indicate the group instrument of choice for large-scale evaluation of guidance treatments or programs.

Note on Availability of SOC

The current version of SOC can be made available for any or all of these purposes at the cost of reproduction. (A single set of the materials is enclosed in an envelope accompanying the report to NIE.) Training of people to administer it can also be offered at cost. It is estimated that persons with no previous knowledge of SOC can be trained to administer it within a total of two to three hours in a group setting: one hour for instruction and demonstration, plus one or two hours of supervised practice.

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APPENDIX A

SOC INTERVIEW SCHEDULE: ORAL PART

(used in Field Test 1, Spring 1974)

Date: ____________________ Student: ____________________

Interview: ____________________ Grade: ____________________

Tape # ____________________ School: ____________________

S.O.C. Interview Schedule: Oral Part

1. What are some of the reasons why people work? (Expected reply: money.)

______ fight boredom

______ meet people/fight loneliness

______ help others

______ power

______ fulfill dreams & goals (accomplishment)

______ family pressure

______ personal enjoyment

______ prestige

______ learning

______ other: ____________________

______ other: ____________________

______ other: ____________________

S.O.C. Interview Schedule: Oral Part

2. Name an occupation you're thinking of as a possibility. ______________________
What things do you like about it?

I. Intrinsic

______ Pres

______ Ind

______ Help

______ Var

______ Lead

______ Int

II. Extrinsic

______ Income

______ Leis

______ Fringe

______ Outlook

______ Advance

______ Security

III. Concomitant

______ Surround

______ Conditions

______ Activities

______ Location

IV. Requirements

______ Early Entry

______ Ability

______ Occ Train

______ Coll Courses

______ Pers Qual

______ Other Req

______ Sex/Minority

3. Is there anything about being a ________________________ that you don't like?

I. Intrinsic

______ Pres
______ Ind
______ Help
______ Var
______ Lead
______ Int

II. Extrinsic

______ Income
______ Leis
______ Fringe
______ Outlook
______ Advance
______ Security

III. Concomitant

______ Surround
______ Conditions
______ Activities
______ Location

IV. Requirements

______ Early Entry
______ Ability
______ Occ Train
______ Coll Courses
______ Pers Qual
______ Other Req
______ Sex/Minority

S.O.C. Interview Schedule: Oral Part

4. What do you know about yourself that makes you think you're qualified to be a ______________ or that you'd be a good ________________?

______ Experience (Specifically: ________________________________)

______ Ability (Specifically: __________________________________)

______ Recommendation of others (Specifically: ___________________)

______ Parents, relatives, or friends are in career

______ Other: ______________________________

5. No one has all the qualities required for his chosen occupation. What physical, mental, or personal qualities of the ideal __________________ do you lack?

______ Fears/hazards (e.g., nurse & blood, police & death)

______ Skills (Specifically: ____________________________________)

______ Patience

______ Accuracy

______ Endure training

______ Efficiency/Self-discipline

______ Innovation/creativity/imagination

______ Other: ______________________________________

______ Other: ______________________________________

6. Suppose a year from now I met you and you were no longer interested in becoming a ____________________. Can you imagine any reasons why you might have changed your mind?

______ Financial problems

______ Boy/girlfriend

______ Family problems

______ School performance

______ New occupation info

______ Changes in values

______ Other: ____

7. What kind of grades should a person have who wants to become a ________________? In what school subjects should a person be good if he/she wants to become a ____________________?

____

____

____

8. If for some reason you couldn't become a ________________, what would you do instead? What alternative plans would you make?

____

____

9. (12th grade only) What are your educational and occupational plans for the next two years?

____

____

10. Where can someone who is interested in a particular occupation find information about it?

- ______ Counselor
- ______ Reference Book
- ______ Teacher
- ______ Professional Org.
- ______ Other: ______________________________

11. Name some of the things that interest you, some of the things you like to do out of school.

Name some of the subjects you like in school, or that you are good in.

Are there any other things which you do well that you haven't named? (Make sure this is an inclusive list. Then ask:)
How do these things relate to becoming a ______________________________?

INTERESTS	RELATIONSHIP
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________
____________________	____________________

S.O.C. Interview Schedule: Oral Part

12. What are the reasons that people finally end up in the occupations they're in?

Positive/Active

- ______ Interest field
- ______ Earn money
- ______ Meet people
- ______ Help others
- ______ Self actualization (accomplishment)
- ______ Fulfill dreams/goals
- ______ Other: ____________________
- ______ Other: ____________________
- ______ Other: ____________________

Passive/Resigned

- ______ Financial problems
- ______ Family pressure
- ______ Lack training
- ______ Geographic location
- ______ Chance
- ______ Other: ____________________
- ______ Other: ____________________
- ______ Other: ____________________

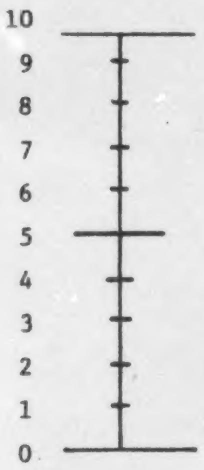
13. I'd like you to rate yourself on how mature a career decision-maker you think you are.

Think of a friend your age who you think is a mature decision-maker. What are his/her initials? We'll put them at the top of the scale.

Think of a friend your age who you think is not a mature decision-maker. What are his/her initials? We'll put them at the bottom of the scale.

Now think about yourself as a decision-maker. Where do you fit in on this scale? Mark the spot with an X, anywhere on the scale from 0 to 10.

Initials ______



A mature decision-maker

Initials ______

An immature decision-maker

What are some of the characteristics of a mature career decision-maker? (Why do you think XX is a mature, good decision-maker?)

____

What are some of the characteristics f an immature career decision-maker? (Why do you think YY is not a good decision-maker?)

____

S.O.C. Interview Schedule: Oral Part

14. Throughout the interview we have talked about you, your career choices, and the important things you expect from the work you enter. Thinking back over all we've said, answer the question, "What satisfactions do you want from working?" Make a complete list.

I. Intrinsic

______ Pres
______ Ind
______ Help
______ Var
______ Lead
______ Int

II. Extrinsic

______ Income
______ Leis
______ Fringe
______ Outlook
______ Advance
______ Security

III. Concomitant

______ Surround
______ Conditions
______ Activities
______ Location

IV. Requirements

______ Early Entry
______ Ability
______ Occ Train
______ Coll Courses
______ Pers Qual
______ Other Req
______ Sex/Minority

APPENDIX B

SOC ORAL INTERVIEW SCORER'S HANDBOOK

December 1973

(used in Field Test 1, Spring 1974)

SOC ORAL INTERVIEW
SCORER'S HANDBOOK

BY

Karen M. Boyle and Gretchen W. Bullock

December 1973

INTRODUCTION

The Interview Schedule is designed to evaluate several criteria regarded as important elements of good decision-making. It accompanies administration of the Simulated Occupational Choice (SOC) game, a procedure used to measure competence in career decision-making.

This handbook has been developed to facilitate scoring of the oral part of the Interview. (The written part is self-administering with scoring based on written responses.) The handbook is divided into 3 sections:

1. Explanation of criteria regarded as important elements of decision-making, with mention of which questions in the oral schedule are used to measure each criterion.
2. Interviewer Guidelines with a discussion of the interviewing style to which each interviewer must adhere.
3. Techniques for Scoring each question on the oral interview, with examples of appropriate and inappropriate responses. An annotated copy of the scoring form, definitions of ten occupational values, and a copy of the written interview are attached.

Section 1: Explanation of Criteria

Five criteria have been selected to measure a student's decision-making ability.

One crucial criterion (I_1) is the degree to which a student is aware of his own values and the role of values in making an occupational choice. Can he define his values explicitly? Does he perceive connections between his values and the characteristics of the options available to him?

Questions 1, 2, 3, 11, and 14 are included to measure this criterion.

Another criterion (I_2) has to do with information about these options. "Good" decision-making implies that the student knows what information he needs, that he can get the information he wants, and that he can use the information he has. Can he identify the information that is relevant to decision-making? Is he familiar with a useful structure of information? Can he locate information within that structure? Can he recall or reproduce important facts accurately? Can he interpret data about options in such a way as to reveal their relevance to his values.

Questions 7 and 10 (plus 8-29 in written section) are included to measure this criterion.

"Good" decision-making also requires recognition of reality factors. This criterion (I_3) is represented by a knowledge of probabilities of success or failure in preparing for and attaining desired goals. Has the student learned to incorporate predictions with values and information in such a way that predictions are given due consideration but do not dominate decisions?

Questions 4 and 5 are included to measure this criterion.

Another set of criteria (I_4) relates to planning. Having made a tentative occupational choice, has the student planned "next steps" that are consistent with that choice? Has he formulated hypotheses about the outcomes of these "next steps"? Has he developed alternative plans for contingencies? Is he prepared to feed outcomes and consequences of previous decisions into his current decision-making? Does he recognize the potential influence of possible sources of change (e.g., shifts in values, revisions in occupational information, unexpected outcomes in preparatory programs)?

Questions 6, 8, and 9 (plus 35 in written section) are included to measure this criterion.

Another criterion (I_5) is an attitude that is not part of the process of decision-making but may be hypothesized to result from competence in decision-making: Is the student actively concerned with exercising control over his own decision-making, or is he passively resigned to the consequences of forces that he regards as external? Is he confident that he is seeking and taking the path of greatest advantage, or does he feel that he is following the path of least resistance?

Question 12 (plus items 30-34 in written section) is included to measure this criterion.

A final criterion is awareness of the meta-dimensions of career decision-making, an ability to estimate and explain one's own status as a decision-maker.

Question 13 (plus 36-39 on the written section) is included to measure this criterion (I_6).

Section 2: Interviewer Guidelines

Interviews are conducted on a one-to-one basis, in a private or semi-private room (e.g., library). Those who are not videotaped have their interviews tape recorded and the interviewer also takes notes.

We take a few minutes to talk with each student before asking the first interview question. We explain what will occur during the interview, encourage the student to answer questions fully, and assure him/her that there are no right or wrong answers.

We try to adhere to the following guidelines in order to achieve uniformity of interviewing style and to insure that no student is granted more encouragement or explanation than any other:

1. Present the questions as they are written without rephrasing. They have been written in a conversational style.

2. Once familiar with the questions, maintain maximum eye contact.

3. Listen: Allow the student a relaxed silence in which he may express his ideas.

4. Appropriate interjections: "I see," a smile, a nod.
   Inappropriate: "Good," "Great," "Oh!"

5. Allow student to communicate verbally or visually that he is through answering a question. Do not ask: "Are you through?" "Is that all you can think of?"

6. Appropriate probes: "What do you mean?" "Can you be more specific?" "Can you give an example?"
   Inappropriate: Supplying ideas to the student by rephrasing his replies or suggesting alternative interpretations and asking him to select one.

All of the guidelines listed above are the goals for the interviewing style. "In the fell clutch of circumstance[1]" they may not always be possible. We try.

---

[1] William Ernest Henley, "Invictus," in English Literature and Its Backgrounds, shorter edition. (New York, 1963), p. 1243.

Section 3: Scoring Techniques

We have attempted to arrange the questions in an order that follows logically, as if two people were having a conversation about career choices. For this reason, questions that pertain to the same criterion measure may not always follow in order. This is especially true for questions 2, 3, and 14 which have a more complex scoring system.

QUESTIONS 2, 3, & 14: The expected student replies are divided into categories for the convenience of the interviewers and scorers. The categories are not iron clad. The three questions are designed to elicit the number of constructs the student uses in viewing the world of work. If the interviewer or scorer cannot determine immediately in which category a reply belongs, jot down the phrase and return to classify it upon completion of the interview. A +1 is given for each different construct mentioned regardless of the category in which it is placed. An example of the items scored in each category is as follows:

I. Intrinsic (Satisfactions that are an integral part of the actual work activities.)

_____ Prestige
"Be respected or acclaimed by others."
"I want a degree in order to be a step above technician." (Education= prestige)

_____ Independence
"Be my own boss." (Independent decisions)
"Not have someone looking over me all the time." (Little supervision)

_____ Helping Others*
"Make people happy."
"Teach people."
"Make the world a better place."

_____ Variety
"Travel to different places."
"Meet different people."*
"Not do the same thing all the time; unexpected things come up."

_____ Leadership
"Have people work for me." (Supervise others)
"Have a chance to give advice." (Influence others)

_____ Field of Interest (No score = "I like it." "It appeals to me." Interviewer must probe: "What things do you like about it?" "What things appeal to you?")

"I like science." (Specifies field)
"People interest me more than things."

II. Extrinsic (Rewards that may come as a result of being in a given occupation.)

_____ Income
"Financially it's a good field."
"Make enough for a secure life."
"Make enough to travel abroad."

_____ Leisure
"Flexible hours."
"Work from 9-5, regular schedule."
"Long vacations."
"Not too much pressure."
"No deadlines."
"Want to have time to be with my family."

_____ Fringe Benefits
"Time off when sick."

_____ Outlook
"There's a big demand."
"Not many people going into the field."
"Improve chances with more education."

_____ Advancement
"Can move up quickly in the field."
"I'd like to be self-employed."

_____ Security
"A steady job; a steady income."
"Non-seasonal."
"Training prepares you for more than one career." (Transfer of skills)
"Can't be replaced by machines."

III. Concomitant (A fact true of the occupation, making it more pleasant, but not necessarily a major source of satisfaction.)

_____ Physical Surroundings
"Like working out of doors."
"An office job, not with machinery."

_____ Work Conditions
"Not spend too much time on feet."
"Not too physically strenuous."
"Won't be working alone." *

_____ Activities (Incidental)
"I like to talk on the telephone."
"I like walking around."

*Note: Many subjects will mention "Working with people." The interviewer is expected to probe "What do you mean by that? Can you give an example?" The student may indicate a desire to 1) help others, 2) have variety, 3) or work with co-workers or team. Those aspects of working with people are marked in the proper categories.

_____ Location
"Live anywhere in the country."
"Work in a warm climate."
"Work in big cities."
"Work close to home."

IV. Requirements

_____ Early Entry
"Have already taken a number of courses and am well into program."
"Must have a masters."

_____ Ability
"Challenging."
"I've always done well in biology."
"I'm very good at sports."
"I'd like to do something creative."

_____ Occupational Training
"On-the-job training provided by the company."
"Can be an apprentice."

_____ College Courses
"I'll have to take physics."
"I'm enrolling in the nursing program."

_____ Personal Qualifications
"Must be patient."
"Must be 21 years old."

_____ Other Requirements
"Must know a foreign language."
"Must pass licensing exam."
"Might have to belong to a union."

_____ Sex/Minority
"Want to be a success as one of the few women in the field."

QUESTION 1:

Score 0 for no mention. (We expect each student to reply "Money" or "to support myself" so no credit is given for this response.)

+1 for all appropriate replies except "Money". (Most choices are noted on scoring form. An example of one not noted but acceptable is "conformity--because everyone else works."

QUESTION 4: (fill in blanks with name of occupation listed in #2.)

Score 0 for no mention or "strong desire", "I'm interested in it." No score is given for the response "parents, relatives, or friends are in career." The scorer may note that a student mentioned this, but it is non-scoreable.

+1 for each response (most choices noted on scoring form) indicating the student's awareness of self as it relates to his career choice.

QUESTION 5: (fill in blank with name of occupation listed in #2.)

Score 0 for no response

+1 for each response (most choices noted on scoring form) indicating the student's awareness of own limitations as they relate to his career choice. Any physical deficiencies such as "near-sightedness" may be placed under "Other" and receive +1.

QUESTION 6: (fill in blank with name of occupation listed in #2.)

Score 0 for no response or "found something I liked better."

+1 for each appropriate reason the student states (most choices noted on scoring form)

QUESTION 7: (fill in blanks with name of occupation listed in #2.)

Score 0 for no response or for any inappropriate response.

+1 for all reasonable responses (even if student names 6 appropriate subjects, still score +1 for total score on this question.)

QUESTION 8: (fill in blank with name of occupation listed in #2.)

Score 0 for no response or for a vague response such as "I'd get another job" or "I'd find something I liked better."

+1 for naming an alternative educational or career choice, such as "Become a computer programmer."

+2 for naming an alternative and giving detailed plans for pursuing it, such as "Become a computer programmer by enrolling in a data-processing program at MCCC."

QUESTION 9: (Scoreable for 12th grade only)

Score 0 for no response or response which indicates intention to avoid decision such as "I'd think of something."

+1 for naming an alternative and giving detailed plans for pursuing it. ("I'd go to college, study science to get into med school" or "I'd get a part-time job as a mechanic while going to night school in engineering.")

QUESTION 10:

Score 0 for no sources mentioned

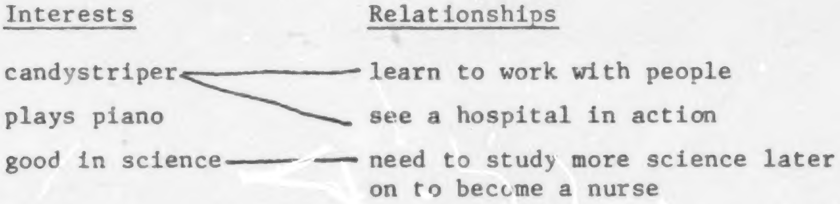
+1 for 1 or 2 appropriate sources

+2 for 3 or more appropriate sources

QUESTION 11: (fill in blank with name of occupation listed in #2.)
The interviewer first asks the student to make an inclusive list of his favorite activities and subjects in schools. All such responses are listed in the left hand column marked "interests". The interviewer then asks the student to list as many relationships between those activities and his preferred career goal as he can think of. Those responses are placed in the right hand column marked "relationships." A line is drawn from each activity to each relationship. More than one activity might relate in the same way to the career goal, so the score is the total number of linking lines. (See example below.)

Score 0 if no relationships can be seen no matter how many interests may be named.

Example: Career Goal--Nurse



Score +3, since three linking lines have been drawn.

QUESTION 12: (This question will be scored in conjunction with questions 30-35 in the written section.)
Score 0 for no response in either column.
Add up the number of active responses (A).
Add up the number of resigned responses (R).

QUESTION 13:
Score 0 for no mention or for an inappropriate response ("He's got his head together.")
+1 for mention of 1 or 2 valid characteristics of mature and/or immature.
+2 for mention of 3 or more valid characteristics of mature and/or immature.

Typical valid characteristics are:

a. knowledge about occupations (has acquired job experience)
b. planning ahead
c. ability to give reasons for reaching a given decision
d. satisfaction with decision made
e. knowledge of own goals and values
f. considers ideas and opinions of others, but makes up own mind (not easily swayed by peer pressure)

Credit may be given for other appropriate responses that are not mentioned above.

Intelligence may not necessarily be correlated with maturity in career decision-making; the validity of this characteristic must be evaluated by the interviewer on an individual basis.

For responses such as "He acts old" or "She acts like a baby" the interviewer may probe, "What specific things does he/she do which make you think this person is (im)mature?"

A Final Note:

Within each question, give only one check for each concept voiced. A student may, for example, be able to evidence a desire for independence on-the-job by saying "I want to be my own boss," "I don't want someone looking over my shoulder all the time." Give credit for the concept "independence" only once per question.

There may be instances of a student offering responses for one question while answering another. The scorer should be alert for such occurrences, and record relevant responses in the proper place. For example: in response to the question "What do you like about your chosen occupation?" a student might interject, "Well, I know a lot of people care about the prestige of this career, but I don't." The student is given credit for "prestige" under question #3 "Is there anything about being a __________________ that you don't like?"

APPENDIX C

SOC INTERVIEW SCHEDULE: WRITTEN PART

(used in Field Test 1, Spring 1974)

S.O.C. Interview Schedule: Written Part

Name ________________________________

Grade ________________________________

School ________________________________

1. Which of the following occupational groups (A-G) most nearly describes the job held by your father or male guardian? If your mother or female guardian is the main support of the family, indicate the group that best describes her job.

   ___A. Service workers--such as barbers, cooks, domestics, firemen, policemen, waiters, farmworkers, fishermen, lumbermen, laborers, longshoremen, etc.

   ___B. Machine operators and related workers--such as apprentices, assemblers, railroad brakemen and switchmen, laundry and dry cleaning operators, mine operators, packers and wrappers, taxicab drivers, welders, etc.

   ___C. Craftsmen, foremen, and related workers--such as bakers, carpenters, electricians, linemen, mechanics, painters, plumbers, toolmakers, etc.

   ___D. Clerical, sales, and related workers--such as bookkeepers, insurance agents, mail carriers, real estate agents, sales clerks, salesmen, secretaries, etc.

   ___E. Business owners or managers or officials, and farm owners or managers--such as contractors, government officials and inspectors, office supervisors, restaurant owners, retailers, sales managers, wholesalers, etc.

   ___F. Professional, technical, and related workers--such as accountants, artists, clergymen, doctors, engineers, lawyers, scientists, teachers, etc.

   ___G. I don't know.

2. How much education does your mother or female guardian have? Indiate the highest educational level attained.

   ___A. Eighth grade or less.

   ___B. Some high school.

   ___C. High school graduate.

   ___D. Some college, junior college, business or trade school (after completing high school).

   ___E. College graduate.

   ___F. Some graduate or professional school.

   ___G. Graduate or professional degree.

   ___H. I don't know.

S.O.C. Interview Schedule: Written Part

3. If you could have your choice and could afford it, choose the one statement below which best describes the amount of education you would like to get:

_____ (a) Not complete high school

_____ (b) Complete high school

_____ (c) Complete one, two, or three years beyond high school (for example, junior college, vocational institute, or training school)

_____ (d) Complete a full four-year-college program (Bachelor's degree)

_____ (e) Take graduate study (Master's degree, doctorate, law degree)

_____ (f) Other, specify ____

4. Realistically, considering your abilities, finances, and personal situation, which of the above is the highest educational level you expect to reach?

(See a-f in Question 3) ____

5. Which of the statements below best describes how definite your career plans are?

_____ I know exactly the occupation I want to enter.

_____ I am trying to decide between two different occupations.

_____ I am considering three or more different occupations.

_____ I do not have any specific occupation in mind at this time.

6. Comparing your grades to the rest of your class (9th or 12th grade), in which group would you put yourself?

_____ Top fifth

_____ Upper fifth

_____ Middle fifth

_____ Lower fifth

_____ Bottom fifth

S.O.C. Interview Schedule: Written Part

7. What do you feel are your chances of completing the educational requirements necessary for entering your first choice occupation?

_____ Very high : 9 out of 10

_____ Good : 7-8 out of 10

_____ Average : 4-6 out of 10

_____ Below average : 2-3 out of 10

_____ Very low : 1 out of 10

Write brief answers or complete the following statements about the occupation you are most interested in. If you do not have enough information to answer a question, write "can't say" under the question.

Name of Occupation ____

8. The major work activities are: a. ____

b. ____

c. ____

9. Amount of contact with other people (such as clients or co-workers) is (check one):

_____ Great

_____ Medium

_____ Small

_____ Can't Say

Give an example of the kind of contact with others: ________________________

10. To enter, you need at least (check one):

_____ No educational requirements

_____ 2 years beyond high school

_____ 4 years (Bachelor's degree)

_____ 5-6 years (Master's degree)

_____ 7 or more (Ph.D. degree)

_____ Can't say

_____ Other (explain)

S.O.C. Interview Schedule: Written Part

11. Some of the required college courses are: ______________________________

____

12. A worker in this occupation should have the following personal qualities:

____

____

____

13. Are there licensing requirements, state examinations, certificates, or any other requirements?

_____ Yes

_____ No

_____ Can't say

If yes, what? ____

14. Typical beginning salary is $ ____________________ per year.

The average salary is $ ______________________ per year.

15. Opportunities for helping others are (check one):

_____ Great

_____ Medium

_____ Small

_____ Can't say

In what ways can a worker in this occupation help other people? ______________

____

____

16. Opportunities for leadership are (check one):

_____ Great

_____ Medium

_____ Small

_____ Can't say

In what ways does a person in this occupation direct others? ________________

____

____

S.O.C. Interview Schedule: Written Part

17. What interest field(s) is this occupation in?

_____ Scientific - data, knowledge, observations, analysis. Example: physicist.
_____ Technological - things, machines, mechanical skills. Example: toolmaker.
_____ Administrative - business, finance, records, systems. Example: accountant.
_____ Personal Contact - people, selling, supervising. Example: salesman.
_____ Verbal - words, reading, writing, talking, listening. Example: journalist.
_____ Aesthetic - painting, sculpture, design, music. Example: artist.

18. How much do other people respect and look up to members of this occupation:

_____ A great amount

_____ A medium amount

_____ A small amount

_____ Can't say

19. The physical surroundings on the job are (check one):

_____ Office

_____ Outdoors

_____ Laboratory

_____ Store

_____ Other

If other, describe: ____

20. Typical working hours are: ____

How often would you be expected to work overtime?

_____ Frequently

_____ Sometimes

_____ Rarely

_____ Can't say

Would you work the same hours every day?

_____ Yes

_____ No

_____ Can't say

S.O.C. Interview Schedule: Written Part

21. As a worker in this occupation, how much supervision would you get?

_____ Very close

_____ Moderate

_____ Very little

_____ Can't say

22. How much variety does this occupation provide in people, places and activities?

	Variety Level			
	Great	Medium	Small	Can't Say
People				
Places				
Activities				

23. For the future (5 years), the chances of getting a job in this occupation are (check one):

_____ Good

_____ Fair

_____ Poor

_____ Can't say

Why? ______________________________

24. Name some businesses or industries, etc. which employ workers in this occupation.

____

25. In this occupation, what are the chances that a worker who does a good job will be fired, laid off, or replaced?

_____ Great

_____ Medium

_____ Small

_____ Can't say

Is there anything about the occupation that might affect job security?

_____ Yes

_____ No

If yes, describe: ______________________________

S.O.C. Interview Schedule: Written Part

Below are activities related to thinking about occupations. Put an "X" in the squares showing how much time you have spent on each of the activities.

	Never	Sometimes	Often
26. Reading about occupations.			
27. Getting different kinds of work experience.			
28. Talking with friends about the kinds of occupations they are considering.			
29. Talking with adults about occupations.			

For each statement check the response that best describes how you feel.

	Strongly Agree	Agree	Disagree
30. I would follow the advice of a teacher, counselor, parent, or friend in planning my career.			
31. Which occupation I enter will be mostly a matter of chance.			
32. Everyone seems to tell me something different; so I don't know which career to choose.			
33. I will make up my mind about which occupation to choose.			
34. In order to plan for a career, I would need to know how soon I would be getting married.			
35. There is plenty of time before I have to start thinking about choosing an occupation.			

S.O.C. Interview Schedule: Written Part

For the following sentences, mark an X on the part of the scale which completes the statement, according to what is true of you.

36. I know ______________ about occupations.

(0)	(1)	(2)	(3)	(4)
Very little		An average amount		A great deal

37. I plan ahead ________________________________.

(0)	(1)	(2)	(3)	(4)
Never		Half of the time		Always

38. After making an important decision, I ____________________________.

(0)	(1)	(2)	(3)	(4)
Usually Don't think I've done the right thing		Hope for the best		Am positive sure I did the right thing

39. Knowledge of my goals and values is _____________________________.

(0)	(1)	(2)	(3)	(4)
Not clear		Fairly clear		Very clear

APPENDIX D

STUDENT QUESTIONNAIRE

(Values Rating Sheet)

(used in Field Test 1, Spring 1974)

Name ______________________ School ____________________ Grade ________

STUDENT QUESTIONNAIRE

1. Below is a list of satisfactions or values that people might consider important in choosing an occupation. Read the definition of the value on the pages attached and then show how important it is to you by selecting a number from 0 to 8 (see the scale below). Place the number in Column 1. EXAMPLE: If High Income is of moderate importance to you, place the number 4 in Column 1; if you can't decide whether its importance to you is slight or moderate, place the number 3 in Column 1.

Column 1		Column 2
______	HIGH INCOME	______
______	PRESTIGE	______
______	INDEPENDENCE	______
______	HELPING OTHERS	______
______	SECURITY	______
______	VARIETY	______
______	LEADERSHIP	______
______	INTEREST FIELD	______
______	LEISURE	______
______	EARLY ENTRY	______
Sum of Col. 1 =		40

SCALE

Importance of value to you	Rating
None	0
	1
Slight	2
	3
Moderate	4
	5
Strong	6
	7
Greatest	8

2. Add the numbers in Column 1. If the sum of these numbers does not equal 40 re-rate the values to make them sum to 40. (Use Column 2.) Do not erase the numbers in Column 1.

3. Check the field that most interests you.

______SCIENTIFIC - data, knowledge, observations, analysis. Example: physicist.

______TECHNOLOGICAL - things, machines, mechanical skills. Example: toolmaker.

______ADMINISTRATIVE - business, finance, records, systems. Example: accountant.

______PERSONAL CONTACT - people, selling, supervising. Example: salesman.

______VERBAL - words, reading, writing, talking, listening. Example: journalist.

______AESTHETIC - painting, sculpture, design, music. Example: artist.

DEFINITIONS OF THE TEN OCCUPATIONAL VALUES

HIGH INCOME: Some minimum income (enough for survival) is essential for everyone. But beyond that, how important to you are the extras? People have different ideas about how much income is "high." Therefore, HIGH INCOME is not defined here as a specific amount. It means more than enough to live on. It means money to use as you wish after you have paid your basic living expenses. You can buy luxuries and travel first class. Choose a number (0-8) to show how important it is to you to find an occupation that pays more than what you need to live on.

PRESTIGE: If people respect you, look up to you, listen to your opinions, or seek your help in community affairs, you are a person with PRESTIGE. Of course, PRESTIGE can be gained in several ways. But in present-day America, occupation is usually the key to PRESTIGE. Rightly or wrongly, we respect some occupations more than others. Choose a number (0-8) to show how important it is to you to work in an occupation most people look up to.

INDEPENDENCE: Some occupations give you more freedom than others to make your own decisions, to work without supervision or direction from others. At one extreme might be talented free-lance artists or writers who may work without supervision. At the other extreme might be military service or some big business organizations with chains of command which severely limit the decisions that each person can make. Choose a number (0-8) to show how important it is to you to be your own boss and to make your own decisions about your work.

HELPING OTHERS: Most people are willing to help others, and show it every day outside of their work. They put themselves out to do favors, make gifts, donate to charities, and so on. THIS DOES NOT COUNT HERE. The question here is, Do you want HELPING OTHERS to be a main part of your occupation? To what extent do you want to devote your life work directly to helping people improve their health, education, or welfare? Choose a number (0-8) to show how important it is to you to find opportunities for HELPING OTHERS in your occupation.

SECURITY: In the most SECURE occupations, you will be free from fear of losing your job and income. You will have tenure--that is, you cannot be fired very easily. Employment will tend to remain high in spite of recessions, and there will be no seasonal ups and downs. Your income will generally remain stable and predictable; it will not vanish with hard times. Your occupation is not likely to be wiped out by automation or other technological changes. Choose a number (0-8) to show how important it is to you to work in an occupation that offers steady employment and income.

VARIETY: Occupations with the greatest VARIETY offer many different kinds of activities and problems, frequent changes in location, new people to meet. VARIETY is the opposite of routine, predictability, or repetition. If you value VARIETY high, you probably like novelty and surprise, and enjoy facing new problems, events, places, and people. Choose a number (0-8) to show how important it is to you to find an occupation that offers ever-changing problems, activities, places, and people.

LEADERSHIP: Do you want to guide others, tell them what to do, be responsible for their performance? People who weight LEADERSHIP high usually want power to control events. They want to influence people to work together effectively. If they are mature, they know that RESPONSIBILITY goes with LEADERSHIP. They are willing to accept the blame when things go wrong, even though they were not at fault. Choose a number (0-8) to show how important it is to you to direct other people in their work and be responsible for their performance.

WORK IN YOUR MAIN FIELD OF INTEREST: Some people have only one main field of interest (Scientific, Technological, Administrative, Personal Contact, Verbal, or Aesthetic); others are interested in two or more of these fields. Some insist that their occupation must be in one of their major fields of interest. Others are willing to work in a field that is less interesting; they feel they can satisfy their main interest in their spare time. Choose a number (0-8) to show how important it is to you to work in one of your main fields of interest instead of some other field.

LEISURE: How important is the amount of time your occupation will allow you to spend away from work? LEISURE may include short hours, long vacations, or the chance to choose your own time off. To give a high weight to LEISURE is like saying, "The satisfactions I get off the job are so important to me that work must not interfere with them." Choose a number (0-8) to show how important it is to you to be able to take a lot of time off from work.

EARLY ENTRY: You can enter some occupations with very little education or training. Other occupations require years of expensive education. (The cost includes loss of income from a job you might have if you were not in school.) Think about the time (and money) you are willing to spend on education. Also think about your attitude toward school: Is education a satisfying experience? Or does it seem like a drag? Choose a number (0-8) to show how important it is to you to choose an occupation that you can enter soon, with only a short period of education.

APPENDIX E

INTERVIEW SCHEDULE: ORAL PART

(used in Field Test 2, Fall 1974)

Int. 1st Yes
No

S.O.C INTERVIEW SCHEDULE: ORAL PART

Date: ____________ Tape #: _________ Student: ______________________________

Interviewer: ____________________ School: ____________________________ Grade: ___

1. Just about everybody works. But not everybody hopes to get the same rewards from work. What are some of the rewards, satisfactions, (& so on) that you think people would like to get from working?

_____ fight boredom

_____ meet people/fight loneliness

_____ help others

_____ power

_____ fulfill dreams & goals (accomplishment)

_____ other: ____________________________

_____ other: ____________________________

_____ family pressure

_____ personal enjoyment--(satisfy interests)

_____ prestige

_____ learning

_____ security

other: ________________________________

other: ________________________________

2. A. Name an occupation you're thinking about as a possibility. ____________________
What do you like about it? What rewards or satisfactions do you hope to get from working in this occupation?

I. Intrinsic

_____ Prestige

_____ Independence

_____ Help

_____ Variety

_____ Leadership

II. Extrinsic

_____ Income

_____ Leisure

_____ Fringe

_____ Outlook

_____ Advance

_____ Security

III. Concomitant

_____ Surroundings

_____ Conditions

_____ Activities

_____ Location

IV. Requirements

_____ Early Entry

_____ Ability

_____ Occ. Training

_____ Coll. Courses

_____ Pers. Qualifications

_____ Other Requirements

_____ Sex/Minority

V. Other ____________________________

____

____

B. What characteristics, other than those already mentioned, make this occupation seem more attractive to you than others? (Example: Indoors or outdoors)

3. What don't you like about being a ______________________________?
(List all the things you can think of that you dislike about it.)

I. Intrinsic

_____ Prestige

_____ Independence

_____ Help

_____ Variety

_____ Leadership

_____ Interest

II. Extrinsic

_____ Income

_____ Leisure

_____ Fringe

_____ Outlook

_____ Advance

III. Concomitant

_____ Surroundings

_____ Conditions

_____ Activities

_____ Location

IV. Requirements

_____ Delayed Entry

_____ Ability

_____ Occ. Training

_____ Pers. Qualifications

_____ Other Requirements

_____ Sex/Minority

V. Other: _______________

____

____

____

4. Do you (Did you ever) have a job? If so, what is (was) it? (1) _______________
(2) ______________________. When? _______________. What did you like about it? What did you dislike about it?

I. Intrinsic

_____ Prestige

_____ Independence

_____ Help

_____ Variety

_____ Leadership

_____ Interest

II. Extrinsic

_____ Income

_____ Leisure

_____ Fringe

_____ Outlook

_____ Advance

III. Concomitant

_____ Surroundings

_____ Conditions

_____ Activities

_____ Location

IV. Requirements

_____ Early Entry

_____ Ability

_____ Occ. Training

_____ Pers. Qualifications

_____ Other Requirements

_____ Sex/Minority

V. Other: _______________

____

____

____

Would you consider this job as a permanent occupation for yourself? Why or why not?

____

____

____

5. How much do you know about your first choice occupation?
A lot ________________ A medium amount ________________ Little or nothing ________________

How have you gotten your information? List all the sources you have used, and tell how good each was as a source of information, e.g., amount of information you obtained, how unbiased and accurate it was, etc.

	Source	Excellent	Good	So-So	Poor
_____	People in the field	___	___	___	___
_____	Counselor	___	___	___	___
_____	Reference Book	___	___	___	___
_____	Teacher	___	___	___	___
_____	Professional Org.	___	___	___	___
_____	Parent	___	___	___	___
_____	Friend or relative	___	___	___	___
_____	Other	___	___	___	___

6. What qualities are necessary or important for being a ________________________________?
Ask one at a time: Which qualities do you possess? What evidence do you have? Which qualities do you lack? What evidence do you have?

Important Qualities	Possess	Lack	Evidence
______________________________	____	____	____________________________________
______________________________	____	____	____________________________________
______________________________	____	____	____________________________________
______________________________	____	____	____________________________________
______________________________	____	____	____________________________________

7. People change their occupational goals. Suppose a year from now I met you and you no longer expected to become a ________________________________. List all the reasons why you might have changed your mind--or why people in general change their minds about their occupational choices.

_____ Financial problems

_____ Boy/girlfriend

_____ Family problems

_____ School performance

_____ New occupation info.

_____ Changes in values

_____ Other: ______________________

_____ Other: ______________________

8. If for some reason you couldn't become a ______________________________, what would you do instead? What other occupation would you choose?

____

Compare your first and second choice occupation. How are they alike? How are they different?

Alike:	Different:
______________________________	______________________________
______________________________	______________________________
______________________________	______________________________
______________________________	______________________________

9. What things do you like about the first that you would also find in the second? What things would you dislike in the second that you wouldn't find in the first? (If "none," ask: Why would you choose 1 over 2?)

Like: ____

____

____

____

Dislike: ____

____

____

____

10. What do you expect to be doing in the next 2 years that will help prepare you to enter ______________________________(occupational field)?

What college courses; training; apprenticeships; work experience/What program would allow you to plan for the first choice and still keep the second open?

____

____

11. Where can someone who is interested in a particular occupation find information about it?

Prompt: Where would you go for a description of the work activities? salaries? working hours? requirements for entry? your own qualifications? conditions of work? opportunities and outlook?

_____ People in the field

_____ Counselor

_____ Reference Book

_____ Teacher

_____ Professional Org.

_____ Parent, relative, friend

_____ Other: ______________________________________

12. Name some of the things you like to do out of school. Name some of the subjects you like in school, or that you are good in.

Are there any other things which you do well that you haven't named? (Make sure this is an inclusive list. Then ask:) Now, let's see if these things relate to becoming a ______________________________ and if they do, how?

Interests:	Relationship:

13. What are some of things people can do to better their chances of ending up in in an occupation that they will like?

_____ get preparatory experience

_____ get required training/education

_____ learn about themselves

_____ learn about occupations

_____ ask someone's opinion

_____ don't know

_____ other: __________________________

_____ other: __________________________

14. Have you done anything to increase your chances of ending up in an occupation you will like? Yes ___ No ___ If yes, what?

_____ get previous experience

_____ get required training/education

_____ learn about themselves

_____ learn about occupations

_____ ask someone's opinion

_____ don't know

_____ other: _________________________

_____ other: _________________________

15. What are some of the characteristics of a good career decision-maker?

Characteristics	Self-rating Above Av.	Av.	Below Av.
______________________________	___	___	___
______________________________	___	___	___
______________________________	___	___	___
______________________________	___	___	___

Compared to other students your age, rate yourself on each of these characteristics:(Above Average, Average, Below Average.)

16. Throughout this interview we have talked about you, your career choice, and the important things that you expect from the work you enter. Thinking back over all you've said, answer the question, "What would an ideal occupation be like?" It doesn't have to be a real occupation, but it should include all the satisfactions, all the things you would want from an occupation, if you could have everything you wanted.

I. Intrinsic

_____ Prestige
_____ Independence
_____ Help
_____ Variety
_____ Leadership

II. Extrinsic

_____ Income
_____ Leisure
_____ Fringe
_____ Outlook
_____ Advance
_____ Security

III. Concomitant

_____ Surroundings
_____ Conditions
_____ Activities
_____ Location

IV. Requirements

_____ Early Entry
_____ Ability
_____ Occ. Training
_____ Coll. Courses
_____ Pers. Qualifications
_____ Other Requirements
_____ Sex/Minority

V. Other: ____________________
____
____
____

APPENDIX F

INFORMATION TEST (PARTS A & B)

(used in Field Test 2, Fall 1974)

8/74

Name: ____________________ Grade: ________ School: __________________________

INFORMATION TEST: PART A

Answer the following questions about the occupation you are most interested in planning for as an actual career choice. Even if you are undecided, pick an occupation that appeals to you.

Name of occupation ____

1. What are the 2 MOST IMPORTANT work activities that you would perform in this occupation?

(1) ____

(2) ____

_____ I don't know.

2. First, check the type or types of contact with other people (clients or co-workers) that you would have in this occupation, and give one specific example for each item checked. Then, rate the amount of time spent doing each by circling one of the numbers in the columns on the right.

			Amount of Time Spent			
			Under 25%	25% - 50%	50% - 75%	Over 75%
____	Counseling or treating	Example: ______________________________	1	2	3	4
____	Supervising	Example: ______________________________	1	2	3	4
____	Entertaining	Example: ______________________________	1	2	3	4
____	Instructing	Example: ______________________________	1	2	3	4
____	Persuading	Example: ______________________________	1	2	3	4
____	Serving (helping or assisting)	Example: ______________________________	1	2	3	4
____	Observing or monitoring	Example: ______________________________	1	2	3	4
____	Other (Specify)	Example: ______________________________	1	2	3	4

____ Does not apply.

____ I don't know.

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3. To enter this occupation you would need at least (check one):

_____ No education beyond high school.

_____ 2 years beyond high school.

_____ 4 years (bachelor's degree).

_____ 5-6 years (master's degree).

_____ 7 or more (Ph.D. degree).

_____ Other (Explain: ______________________________)

_____ I don't know.

4. If education or training beyond high school is needed, list 3 specific courses that would probably be required.

(1) ______________________________

(2) ______________________________

(3) ______________________________

5. Name two aptitudes or abilities needed by a person going into this occupation.

(1) ______________________________

(2) ______________________________

_____ I don't know.

6. Check all of the special requirements listed below which are needed to work in this occupation.

_____ Certificate or license

_____ Examination to qualify for certificate or license

_____ Union membership

_____ Apprenticeship

_____ None

_____ Other (Explain: ______________________________)

_____ I don't know.

Part A

7. Check the salary range that indicates the average amount of money per year earned by people in this occupation.

_____ $20,000 or more

_____ $15,000-$19,999

_____ $11,000-$14,999

_____ $8,000-$10,999

_____ $7,999 or less

_____ I don't know.

8. Check the one statement which best describes the type of help given to others by people in this occupation.

_____ Works with people directly to improve their health, welfare, or education.

_____ Makes life better for the general public in a significant way.

_____ Provides a service that makes life more convenient or pleasant.

_____ Helping others is not a major purpose of the work.

_____ I don't know.

If appropriate, give an example of a "helping-others" activity for the statement you checked:

9. Check the one statement which best describes the degree of leadership exercised by a person in this occupation.

_____ Has great influence on policy-making decisions or on the lives of many others.

_____ Is responsible for a large number of employees or has considerable influence on others.

_____ Supervises a small group of workers or has moderate influence over others.

_____ Has little or no influence over other workers or clients.

_____ I don't know.

If appropriate, give an example of a leadership activity for the statement you checked:

10. In which of the following fields of interest does this occupation belong? (If you mark more than one, number 1st, 2nd, 3rd, in importance.)

_____ Scientific--data, knowledge, observations, analysis, mathematics.

_____ Technological--things, machines, manipulative and mechanical skills.

_____ Administrative--business, finance, records, systems.

_____ Personal Contact--people, selling, supervising, persuading.

_____ Verbal--words, reading, writing, talking, listening.

_____ Artistic--painting, sculpture, design, dance, music, the Fine Arts.

_____ I don't know.

11. Check one statement which best describes the prestige of this occupation.

_____ People tend to look up to or respect members of this occupation.

_____ People neither respect nor disrespect members of this occupation.

_____ People tend to look down on or disrespect members of this occupation.

_____ I don't know.

12. Check the work setting in which most activities for this job are performed.

Indoors

_____ Office

_____ Laboratory

_____ Store

_____ Classroom

_____ Hospital

_____ Studio

_____ Workshop

_____ Factory

_____ Other indoor setting (Specify: ____________________)

Outdoors

_____ Park

_____ "In the field"

_____ Forest

_____ Body of water

_____ Farm

_____ Gardens

_____ Other outdoor setting (Specify: ________________________)

_____ I don't know.

13. Check all of the following special features which apply to work in this occupation.

_____ Most of the work is done standing or moving about.

_____ Most of the work is done sitting.

_____ You must take safety precautions to protect yourself from injury.

_____ The area in which you work may be noisy.

_____ The work requires lifting, carrying, moving heavy objects.

_____ The work requires climbing, crawling, stooping, bending.

_____ There are no special features of the type listed above.

_____ I don't know.

14. Check the dress regulations which usually apply to persons in this occupation.

_____ You are required to wear a uniform or special work clothes.

_____ You are required to look neat and presentable.

_____ There are no dress requirements.

_____ I don't know.

15. Check the statement which best describes the work schedule in this occupation.

_____ The work schedule is fixed; you must account for all your time.

_____ You must accomplish a certain amount of work, but you are not required to keep to a strict time schedule.

_____ You may schedule your work as you wish, and there are no requirements as to how much work you must accomplish.

_____ Other (describe) ____

_____ I don't know.

16. For each of the four categories related to working time, check the statement below which best describes the occupation you are considering.

(1) Work Days:

_____ Work usually done on weekdays, Monday through Friday; almost never on weekends.

_____ Weekend work is occasionally required.

_____ Weekend work is frequently required.

_____ I don't know.

(2) Shift Work:
(Working hours other than approximately 9 a.m. to 5 p.m.)

_____ Shift work is frequently required.

_____ Shift work is rarely required.

_____ I don't know.

(3) Overtime:

_____ Overtime work is frequently required.

_____ Overtime work is occasionally required.

_____ Overtime work is rarely or never required.

_____ I don't know.

(4) Night Work:

_____ Night work is frequently required.

_____ Night work is rarely required.

_____ I don't know.

17. Check the one statement which best describes the amount of supervision usually received by workers in this occupation.

_____ Work without supervision; plan own work; seldom evaluated by others.

_____ Supervised weekly; follow overall assignments.

_____ Supervised daily; work under supervisor who assigns and schedules work; free to decide details of work.

_____ Supervised hourly; activities are directly supervised with little opportunity to act on your own.

_____ I don't know.

18. In each of the three categories below, check the statement which best describes the opportunities for variety in this occupation.

(1) Variety in People:

_____ Meet and deal with many different people during a work day.

_____ Meet or deal with a few different people during a work week.

_____ Meet or deal with the same people every day.

_____ I don't know.

(2) Variety in Places:

_____ Work in many different work settings or travel to many different places.

_____ Usually work in the same setting, with occasional outside meetings or trips to other places.

_____ No change in work setting.

_____ I don't know.

(3) Variety in Problems:

_____ Work activities change frequently; must deal with the unexpected.

_____ Major work activities are the same, but some minor variations may occur.

_____ Work activities follow a set routine which is repeated every day.

_____ I don't know.

19. Check the one statement which best describes the future employment prospects for workers in this occupation.

_____ Excellent: Strong demand for workers; shortage of qualified people.

_____ Good: Steady demand for workers.

_____ Fair: Demand limited except in certain geographic areas OR demand is decreasing due to automation or economic conditions.

_____ Poor: Little demand, if any; the career is very overcrowded, and few jobs are available.

_____ I don't know.

20. In which one of the following places is a person in this occupation most likely to get a job?

_____ Federal Government

_____ Local Government

_____ Industry

_____ Business

_____ School

_____ Hospital or medical office

_____ Self-employed

_____ Other (Specify) _______________

_____ I don't know.

21. How much security would you have in this occupation? Check all of the following statements that describe the occupation you have named.

_____ You would be guaranteed a job no matter what else happens. (For example, you would have a permanent contract, tenure, or be protected by a union agreement.)

_____ You would have no guarantee that you would keep your job.

_____ Your job would be permanent and year-round.

_____ Your job would be seasonal.

_____ Your job would probably not be replaced by a machine or computer.

_____ A machine might take over jobs in this occupation.

_____ You would be employed for most of your adult life, up to the standard retirement age of 65.

_____ Your occupation emphasizes youth and strength, so you probably could not be employed in this career past the age of 30 or 35.

_____ I don't know.

22. Name an occupation similar to the one you are presently considering.

Similar occupation: _______________________________

Write three kinds of rewards or satisfactions that you could get from both your first choice occupation and the one you just named.

(1) _______________________________

(2) _______________________________

(3) _______________________________

Name: ________________________ Grade: _____ School: ________________________

INFORMATION TEST: PART B

1. Which one of the following occupational groups most nearly describes the job held by your father or male guardian? If your mother or female guardian is the main support of the family, indicate the group that best describes her job.

___ Service workers--such as barbers, cooks, domestics, firemen, policemen, waiters, farmworkers, fishermen, lumbermen, laborers, longshoremen, etc.

___ Machine operators and related workers--such as apprentices, assemblers, railroad brakemen and switchmen, laundry and dry cleaning operators, mine operators, packers and wrappers, taxicab drivers, welders, etc.

___ Craftsmen, foremen, and related workers--such as bakers, carpenters, electricians, linemen, mechanics, painters, plumbers, toolmakers, etc.

___ Clerical, sales, and related workers--such as bookkeepers, insurance agents, mail carriers, real estate agents, sales clerks, salesmen, secretaries, etc.

___ Business owners or managers or officials, and farm owners or managers--such as contractors, government officials and inspectors, office supervisors, restaurant owners, retailers, sales managers, wholesalers, etc.

___ Professional, technical, and related workers--such as accountants, artists, clergymen, doctors, engineers, lawyers, scientists, teachers, etc.

___ I don't know.

2. How much education does your mother or female guardian have? Indicate the highest educational level attained.

___ Eighth grade or less.

___ Some high school.

___ High school diploma.

___ Some college, junior college, business or trade school (after completing high school).

___ College degree.

___ Some graduate or professional school.

___ Graduate or professional degree.

___ I don't know.

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Part B

3. If you could have your choice and could afford it, choose the one statement below which best describes the amount of education you would like to get:

_____ (a) Not complete high school

_____ (b) Complete high school

_____ (c) Complete one, two, or three years beyond high school (for example, junior college, vocational institute, or training school)

_____ (d) Complete a full four-year-college program (bachelor's degree)

_____ (e) Take graduate study (master's degree, doctorate, law degree)

_____ (f) Other, specify ______________________________

4. Realistically, considering your abilities, finances, and personal situation, which of the levels listed in Question 3 is the highest educational level you expect to reach?

_____________ (Use letter, a-f, from Question 3) _____________

5. Which of the statements below best describes how definite your career plans are?

_____ I know exactly the occupation I want to enter.

_____ I am trying to decide between two different occupations.

_____ I am considering three or more different occupations.

_____ I do not have any specific occupation in mind at this time.

6. Comparing your marks to the rest of your class (9th or 12th grade), in which group would you put yourself?

_____ Top fifth

_____ Upper middle fifth

_____ Middle fifth

_____ Lower middle fifth

_____ Bottom fifth

7. What do you feel are your chances of completing the educational requirements necessary for entering your first choice occupation?

_____ Very high : 9 out of 10

_____ Good : 7-8 out of 10

_____ Average : 4-6 out of 10

_____ Below average : 2-3 out of 10

_____ Very low : 1 out of 10

Below are activities related to thinking about occupations. Put an "X" in each row of the box showing how much time you have spent on each of the activities.

		Never	Sometimes	Often
8.	Reading about occupations.			
9.	Getting different kinds of work experience.			
10.	Talking with friends about the kinds of occupations they are considering.			
11.	Talking with adults about occupations.			

For each statement check the response that best describes how you feel.

	Strongly Agree	Agree	Disagree
12. I would follow the advice of a teacher, counselor, parent, or friend in planning my career.	______	______	______
13. Which occupation I enter will be mostly a matter of chance.	______	______	______
14. Everyone seems to tell me something different; so I don't know which career to choose.	______	______	______
15. I will make up my mind about which occupation to choose.	______	______	______
16. In order to plan for a career, I would need to know how soon I would be getting married.	______	______	______
17. There is plenty of time before I have to start thinking about choosing an occupation.	______	______	______

For the following sentences, mark an X on the part of the scale which completes the statement, according to what is true of you.

18. I know ______________ about occupations.

(0)	(1)	(2)	(3)	(4)
Very little		An average amount		A great deal

19. I plan ahead _______________________________.

(0)	(1)	(2)	(3)	(4)
Never		Half of the time		Always

20. After making an important decision, I usually _________________________.

(0)	(1)	(2)	(3)	(4)
don't think I've done the right thing		hope for the best		am sure I did the right thing

21. My knowledge of my goals and values is ______________________________.

(0)	(1)	(2)	(3)	(4)
Not clear		Fairly clear		Very clear

APPENDIX G

MANUAL FOR INTERVIEWERS

(used in Field Test #2, Fall 1974)

MANUAL FOR INTERVIEWERS

An interview-questionnaire has been developed for evaluating several criteria regarded as important elements of good career decision-making. The interview records Ss' responses to the interview section. Ss write in their own responses to the questionnaire section, which has two parts. Part A of the questionnaire is designed to assess a student's knowledge about his* first choice occupation. Part B asks for background biographical information and includes questions assessing the student's attitudes and opinions about career decision-making. The oral interview, though structured, gives students an opportunity for free responses which show the status and nature of their thinking about career decisions. It must be administered by interviewers trained to convey questions in a uniform manner.

This handbook has been developed to guide interviewers in administering and scoring the oral part of the interview, and in scoring the written parts of the questionnaire. There are three sections:

1. EXPLANATION OF CRITERIA. The important elements of decision-making to be measured are described, with a mention of which questions were designed to measure each criterion.

2. ADMINISTERING THE INTERVIEW. Suggestions for a uniform interviewing style are given, with question-by-question examples of responses which would be inappropriate or would require further explanation, and the probes which would be allowed.

3. GUIDELINES FOR CODING AND SCORING. The number of points allotted to each question is indicated, with examples of good, poor, or borderline responses. An annotated copy of the interview is attached, indicating the method of scoring each question.

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* To avoid awkwardness, this Manual follows the convention of using the masculine form of the third-person singular pronoun to refer to either sex.

Section 1: EXPLANATION OF CRITERIA

Six criteria have been selected to measure a student's career decision-making ability. Listed below are the six criteria and the questions on the oral interview and the written questionnaire which were designed to measure those criteria.

I_1 Constructs

One crucial criterion is the degree to which a student is aware of his own values and the role of values in making an occupational choice. Can he define his values explicitly? Does he perceive connections between his values and the characteristics of the options available to him? How rich or impoverished are the dimensions along which he construes occupations? Does he perceive many or few such dimensions?

Questions 1, 2, 3, 8, 9, and 16 (plus Part A #22 in the written section) are included to measure this criterion.

In addition to Intrinsic Satisfactions and Extrinsic Rewards, the constructs listed on the scoring grid include some concomitant satisfactions and requirements frequently mentioned by students. The written question #22 asks for three satisfactions to be obtained from both a first and second choice occupation.

Although Question 4 was also designed to elicit comments on Criterion I_1 (Constructs), it is not added into the sum of these scores because 9th graders who are less likely to have held a job or to have had any work experience would be unfairly penalized. Those who have worked, however, may be aware of values, satisfactions and drawbacks not thought of by those who never worked. Including the question in the interview makes it possible to collect data which may be used at another time.

I_2 Information

Another criterion has to do with information about options. "Good" decision-making implies that the student knows what information he needs, that he can get the information he wants, and that he can use the information he has. Can he identify the information that is relevant to decision-making? Is he familiar with a useful structure of information? Can he locate information within that structure? Can he recall or reproduce important facts accurately? Can he interpret data about options in such a way as to reveal their relevance to his values?

Questions 5B and 11 of the oral interview (plus 1-21 in Part A of the written questionnaire) are included to measure this criterion.

5B and 11 on the oral interview were designed to show an awareness of the sources of occupational information. Part A: 1-21 of the written questionnaire asks for the amount of specific detailed information the student actually has on important aspects of his first choice occupation.

I_3 Reality

"Good" decision-making also requires recognition of reality factors. This criterion is represented by a knowledge of probabilities of success or failure in preparing for and attaining desired goals. Has the student learned to incorporate predictions with values and information in such a way that predictions are given due consideration but do not dominate decisions?

Questions 6 and 12 of the oral interview are included to measure this criterion.

Question 6 asks first: "What qualities are necessary or important for being a ________________?" Then the student is asked whether he possesses or lacks the qualities he deems necessary. Question 12 uses the reverse approach: "Name some of the activities or subjects that you like or do well in." Then, "Are they related to the career of your choice?" If the student is realistic, presumably he will not have chosen a career for which he has no talent or liking.

I_4 Planning

Another set of criteria relates to planning. Having made a tentative occupational choice, has the student planned "next steps" that are consistent with that choice? Has he formulated hypotheses about the outcomes of these "next steps"? Has he developed alternative plans for contingencies? Is he prepared to feed outcomes and consequences of previous decisions into his current decision-making? Does he recognize the potential influence of possible sources of change (e.g., shifts in values, revisions in occupational information, unexpected outcomes in preparatory programs)?

Questions 7, 10, 13, and 14 of the oral interview (as well as Part B: 17, and 8-11 in the written section) are included to measure this criterion.

Question 7 asks why people might change occupational goals. Question 10 asks about the student's plans for the next two years and the possibility of keeping secondary options open. Question 13 raises the notion of what people in general can do to improve their career planning. Question 14 asks what steps the student himself has already taken.

The written questions ask the student to show the amount of time he has spent in important aspects of planning.

I_5 Control

Another criterion is an attitude that is not part of the process of decision-making but may be hypothesized to result from competence in decision-making: Is the student actively concerned with exercising control over his own decision-making, or is he passively resigned to the consequences of forces that he regards as external? Is he confident that he is seeking and taking the path of greatest advantage, or does he feel that he is following the path of least resistance?

Questions 12-16 in Part B of the written questionnaire are included to measure this criterion. They seek to determine the student's attitudes about the amount of control he would or could exercise.

I_6 Awareness

A final criterion is awareness of the meta-dimensions of career decision-making, an ability to estimate and explain one's own status as a decision-maker.

Questions 5a, 15a, and 15b (plus Part B: 7 and 18-21 on the written section) are included to measure this criterion.

Question 5a involves a self-rating of the state of the student's information about the career he has chosen (which can be compared with his actual rating on the information questionnaire). Question 15a asks for the student's concept of the characteristics of a good career decision-maker. 15b requests that he rate himself on these characteristics.

Part B: 7 and 18-21 on the written section involve self-ratings of the characteristics considered to be important in career decision-making, some of which the student may not have mentioned in the oral interview.

Section 2: ADMINISTERING THE INTERVIEW

The oral interview is administered before the written questionnaire so that the student will not be influenced by the written questions.

Interviews, which are conducted on a one-to-one basis, in a private or semi-private room such as library, small office, or corner of the guidance facility, may last from half an hour to an hour, depending on the student. All interviews are tape-recorded, and the interviewer also takes notes. Note-taking is simplified for some questions by having the interviewer check a prepared list of the most frequent responses. In other cases, the interviewer must write down key phrases.

Students are assured that the tapes are for research purposes only and will be kept absolutely confidential. The recordings are useful mainly for training interviewers, for developing and testing interview-rater reliabilities, and for reviewing a student's exact response.

Before asking the first question, interviewers take a few minutes to talk with each student to explain what will occur during the interview. Students are told that there are no right or wrong answers, and are encouraged to reply to each question as fully as possible, even repeating information given for a previous question if necessary. They are also told that they may have all the time that they wish, and should indicate to the interviewer when they have finished answering a question and would like to go on.

Guidelines

In order to achieve uniformity of interviewing style and to insure that no student is granted more encouragement or explanation than any other, interviewers should try to adhere to the following guidelines:

1. Present the questions as they are written without rephrasing. They have been written in a conversational style.

2. Once familiar with the questions, maintain maximum eye contact.

3. Allow the student a relaxed silence in which to express his ideas.

4. Avoid evaluative comments such as "Good," "Great," "Oh!" To acknowledge a reply say, "I see," or simply smile or nod.

5. If the student pauses, do not ask: "Are you through?" or "Is that all?" Wait for verbal or visual cues that he is through answering a question.

6. When students answer with generalizations that may need clarification, the interviewer may probe: "What do you mean?" "Can you be more specific?" "Can you give an example?" It is inappropriate to supply ideas to the student by rephrasing his replies or suggesting alternative interpretations and asking him to select one.

   Examples of responses requiring further explanation:

   "I like it." "It's satisfying...rewarding...fun." "It appeals to me," or "It's boring."

   Probe: What things do you like about it?" "What is boring about it?" (The answer may reveal that the student was referring to field of interest, the amount of variety, or kinds of activities.)

   "Dealing with people."

   Probe: "For what purpose would you be dealing with people?" or "Can you give an example of what you mean by 'dealing with people'?" (The answer might reveal that the student meant helping people, seeing a variety of people, or working with others rather than alone.)

Section 3: GUIDELINES FOR CODING AND SCORING

Scoring varies from question to question on both the interview and the questionnaire. Therefore, scorers must check the method of scoring each question as they go along.

Interview

Note that when recording answers, interviewers should give only one point for each concept expressed. For example, a student may say, "I want to be my own boss," and "I don't want someone looking over my shoulder all the time." Give credit for the concept "independence" only once.

QUESTION 1:

1. Just about everyone works. But not everyone hopes to get the same rewards from work. What are some of the rewards, satisfactions, (& so on) that you think people would like to get from working?

_____ fight boredom

_____ meet people/fight loneliness

_____ help others

_____ power

_____ fulfill dreams & goals (accomplishment)

_____ other: ____________________

_____ other: ____________________

_____ family pressure

_____ personal enjoyment--(satisfy interests)

_____ prestige

_____ learning

_____ security

other: ____________________

other: ____________________

This question is included to measure the student's awareness of the many constructs in the world of work. (I_1) Assign one point (+1) for each separate construct named. No score is given for "money" because almost everyone mentions it. Other than this, all reasonable responses are included in the scoring.

Scoring: No idea = 0
1-2 ideas = +1
3 or more ideas = +2

Scores for this question will be no higher than +2.

QUESTION 2:

2. A. Name an occupation you're thinking about as a possibility. ______________
What do you like about it? What rewards or satisfactions do you hope to get from working in this occupation?

I. Intrinsic

_____ Prestige

_____ Independence

_____ Help

_____ Variety

_____ Leadership

_____ Interest Field

II. Extrinsic

_____ Income

_____ Leisure

_____ Fringe

_____ Outlook

_____ Advance

_____ Security

III. Concomitant

_____ Surroundings

_____ Conditions

_____ Activities

_____ Location

IV. Requirements

_____ Early Entry

_____ Ability

_____ Occ. Training

_____ Coll. Courses

_____ Pers. Qualifications

_____ Other Requirements

_____ Sex/Minority

V. Other

____

____

____

B. What characteristics, other than those already mentioned, make this occupation seem more attractive to you than others? (Example: indoors or outdoors)

This question is another way of getting at the student's awareness of the many constructs in the world of work (I_1).

One point (+1) is assigned for each separate construct named. Each construct should be counted only once, however, no matter how many times a student may refer to it or how many examples or refinements of that construct he may mention.

The score for this question is the sum of the points assigned. Scores for this question typically fall in the range of 1 to 6.

Examples of appropriate responses for the categories listed on the interview form are given below.

I. Intrinsic (Satisfactions that are an integral part of the actual work activities.)

Prestige
"Be respected or acclaimed by others."
"I want a degree in order to be a step above technician." (Education = prestige)
"Be a big man."

Independence
"Be my own boss." (Independent decisions)
"Not have someone looking over me all the time." (Little supervision)

Helping Others
"Make people happy."
"Teach people."
"Make the world a better place."

Variety
"Travel to different places."
"Meet different people."
"Not do the same thing all the time; unexpected things come up."

Leadership
"Have people work for me." (Supervise others)
"Have a chance to give advice." (Influence others)
"Not too much responsibility."

Interest
"I like science." (Specifies field)
"I like animals."
"I like to sing and act."
(No score if probe for more specific explanation of "I like it" yields nothing additional.)

II. Extrinsic (Rewards that may come as a result of being in a given occupation)

Income
"Financially it's a good field."
"Make enough for a secure life."
"Make enough to travel abroad."
"Make enough to take care of my family."

Leisure
"Flexible hours."
"Work from 9-5, regular schedule."
"Long vacations."
"Not too much pressure."
"No deadlines."
"Want to have time to be with my family."

Fringe Benefits
"Time off when sick."

Outlook
"There's a big demand."
"Not many people going into the field."
"Improve chances of getting a job with more education."

Advancement
"Can move up quickly in the field."
"I'd like to be self-employed."

Security
"A steady job; a steady income."
"Non-seasonal."
"Training prepares you for more than one career." (Transfer of skills)
"Can't be replaced by machines."

III. Concomitant (A fact true of the occupation, making it more pleasant, but not necessarily a major source of satisfaction.)

Physical Surroundings
"Like working out of doors."
"An office job, not with machinery."
"Air-conditioned office."

Work Conditions
"Not spend too much time on feet."
"Not too physically strenuous."
"Won't be working alone."

Location
"Live anywhere in the country."
"Work in a warm climate."
"Work in big cities."
"Work close to home."

IV. Requirements

Early Entry (or the negative "Delayed Entry" on question 3)
"Have already taken a number of courses and am well into program."
"Must have a masters."
"Would like it because only requires high school diploma."

Ability
"Challenging."
"Work at a higher level."
"I've always done well in biology."
"I'm very good at sports."
"I'd like to do something creative."
"No problems."
"Not enough thought."

Occupational Training
"On-the-job training provided by the company."
"Can be an apprentice."

College Courses
"I'll have to take physics."
"I'm enrolling in the nursing program."

Personal Qualifications
"Must be patient."
"Must be 21 years old."

Other Requirements
"Must know a foreign language."
"Must pass licensing exam."
"Might have to belong to a union."

Sex/Minority
"Want to be a success as one of the few women in the field."

V. Other

In addition to bona fide "Other" values, a few replies, not considered to be of the same calibre of those given above, yet meriting some recognition, were given one point (+1) under "Other." Such phrases as "Doing a good job," "Getting the job done," "Being a success," or others expressing some desire for self-actualization are examples. In the future, it might be wise to probe for further clarification of such answers.

QUESTIONS 3 and 4:

3. What don't you like about being a ______________________________?
(List all the things you can think of that you dislike about it.)

I. Intrinsic

_____ Prestige

_____ Independence

_____ Help

_____ Variety

_____ Leadership

_____ Interest

II. Extrinsic

_____ Income

_____ Leisure

_____ Fringe

_____ Outlook

_____ Advance

_____ Security

III. Concomitant

_____ Surroundings

_____ Conditions

_____ Activities

_____ Location

IV. Requirements

_____ Delayed Entry

_____ Ability

_____ Occ. Training

_____ Pers. Qualifications

_____ Other Requirements

_____ Sex/Minority

V. Other: ________________

____

____

____

4. Do you (Did you ever) have a job? If so, what is (was) it? (1)________________
(2) ____________________. When? __________________ What did you like about it? What did you dislike about it?

I. Intrinsic

_____ Prestige

_____ Independence

_____ Help

_____ Variety

_____ Leadership

_____ Interest

II. Extrinsic

_____ Income

_____ Leisure

_____ Fringe

_____ Outlook

_____ Advance

III. Concomitant

_____ Surroundings

_____ Conditions

_____ Activities

_____ Location

IV. Requirements

_____ Early Entry

_____ Ability

_____ Occ. Training

_____ Pers. Qualifications

_____ Other Requirements

_____ Sex/Minority

V. Other: ________________

____

____

____

Would you consider this job as a permanent occupation for yourself? Why or why not?

____

____

Scoring for both these questions is exactly the same as for QUESTION 2. For QUESTION 3, the scores typically fall between 1 and 5. For QUESTION 4, scores range from 0 to 7.

Note that the score for QUESTION 4, although dealing with Constructs, is not included in the summation for Criterion I, as explained under the Section on criteria. The data are recorded, however, for possible use at some other time.

QUESTION 5.

5a. How much do you know about your first choice occupation?
A lot ______________ A medium amount ______________ Little or nothing __________

5b. How have you gotten your information? List all the sources you have used, and tell how good each was as a source of information, e.g., amount of information you obtained, how unbiased and accurate it was, etc.

Source	Excellent	Good	So-So	Poor
_____ People in the field	____	____	____	____
_____ Counselor	____	____	____	____
_____ Reference Book	____	____	____	____
_____ Teacher	____	____	____	____
_____ Professional Org.	____	____	____	____
_____ Parent	____	____	____	____
_____ Friend or relative	____	____	____	____
_____ Other	____	____	____	____

Give two scores: 5a for amount of knowledge, and 5b for list of sources.

5a.	Response	Score
	A lot	+2
	A medium amount	+1
	Little or nothing	0
5b.	No Response	0
	1-2 sources	+1
	3 or more sources	+2

No score will be higher than +2 for 5a or 5b.
Note that the student's evaluation of the sources (excellent, good, etc.) is not scored. It is included for research purposes only.

QUESTION 6

6. What qualities are necessary or important for being a ____________________?
Ask one at a time: Which qualities do you possess? What evidence do you have? Which qualities do you lack? What evidence do you have?

Important Qualities	Possess	Lack	Evidence

Give one point (+1) for each supported quality (whether student gives evidence that he possesses or lacks the quality). For example: "Possesses patience--I don't get angry when I baby sit"; or "Do not possess artistic ability--I don't draw as well as my cousin."

Some students will name skills as qualities. Give credit for specialized skills which will require special abilities to learn (e.g., math requires mathematical ability, drawing requires artistic ability. Give credit if student gives evidence of the ability.)

QUESTION 6 (Continued)

"Intelligence" is given credit if evidence such as good grades is given for it. "Knowledge" is given credit if evidence is given of ability to gain knowledge.

No credit is given for "Typing" because it is a skill for which most people have a modicum of ability and therefore it is classified as a skill which is acquired. No credit is given for "Knowing what you are doing," "interest," or "strong desire to do it" because these would be true for any occupation.

The score for this question is the sum of the points assigned. Scores for this question typically fall in the range of 0-4.

QUESTION 7

7. People change their occupational goals. Suppose a year from now I met you and you no longer expected to become a ______________________. List all the reasons why you might have changed your mind--or why people in general change their minds about their occupational choices.

_____ Financial problems

_____ Boy/girlfriend

_____ Family problems

_____ School performance

_____ New occupation info.

_____ Changes in values

_____ Other: ______________________

_____ Other: ______________________

Response	Score
"Don't know" or weak answer such as "Finding something you like better" or "Finding something you didn't like about it."	0
1-2 reasons	+1
3 or more reasons	+2

Caution: Check financial problems only if student indicates he could not afford to train for the career. "Low pay" belongs under "New Occupational Information." "Could not support family on pay" also belongs under "New Occupational Information," not under family problems.

Scores for this question will be no higher than +2.

QUESTION 8

8. If for some reason you couldn't become a ______________________, what would you do instead? What other occupation would you choose?

____

Compare your first and second choice occupation. How are they alike? How are they different?

Alike:	Different:
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________

Give one point (+1) for each construct mentioned, whether it is under "alike" or "different," but do not count any idea or construct more than once. For example: "Alike in that both involve mechanical drawing," "Different in that an architect draws house plans, an aeronautical engineer draws designs for engines." Count only one point for drawing.

The score for this question is the sum of the points assigned.

Scores typically range from 0-6.

QUESTION 9

9. What things do you like about the first that you would also find in the second? What things would you dislike in the second that you wouldn't find in the first? (If "none," ask: "Why would you choose 1 over 2?")

Like: ____

____

____

____

Dislike: ____

____

____

Give one point (+1) for each construct mentioned, whether it be under "Like" or "Dislike", but do not count any construct more than once. For example: "Like helping people" and "Would not like helping sick people as much as helping children." Count only one point for helping people.

The score for this question is the sum of the points assigned.

Scores for this question usually range from 0 to 5.

QUESTION 10

10. What do you expect to be doing in the next 2 years that will help prepare you to enter ____________________________(occupational field)?

What college courses, training, apprenticeships, work experience, or what program would allow you to plan for the first choice and still keep the second open?

____

____

____

This question should produce a wide range of responses indicating whether the student has done no planning at all, has a few vague plans in mind, or has carefully laid out plans, including provisions for alternatives. Scoring will involve subjective judgment.

Score	Response
0	"Don't know" or weak answer, such as "Will take typing in 10th grade--might be useful for a librarian; algebra, but I don't know what it might do for you." (No mention of first career which was teaching the deaf.)
+1	A general answer encompassing an alternate career, or for carefully detailed plans but only for one career (no second career named, or second career named but not planned for). Example: "Get on team, and take auto mechanics in high school," (for coach and auto mechanic). "Job with Red Cross. More work with Alcoholics Anonymous. Hotline or counseling. Psychology and philosophy," (good answer for social worker, no mention of second career, animal trainer).

+2	A carefully laid out plan, detailed and reasonable, which includes a second career. Example: "College--basic science and nursing--6 weeks practical experience in each area of nursing. Plan to take all psychology electives and concentrate on psychiatric nursing. Summer job if can." (Covers both psychiatric nurse and child psychologist.) When second career is closely related to first, student might appear to have an advantage, but awareness of a closely related second choice may be assumed to be evidence of good planning.

No score will be higher than +2.

QUESTION 11

11. Where can someone who is interested in a particular occupation find information about it?

(Prompt: Where would you go for a description of the work activities? salaries? working hours? requirements for entry? your own qualifications? conditions of work? opportunities and outlook?)

_____ People in the field

_____ Counselor

_____ Reference Book

_____ Teacher

_____ Professional Org.

_____ Parent, relative, friend

_____ Other: ____

Score	Response
0	No idea. "Don't know."
+1	1 - 2 ideas
+2	3 or more ideas

No score will be higher than +2.

QUESTION 12

12. Name some of the things you like to do out of school. Name some of the subjects you like in school, or that you are good in.

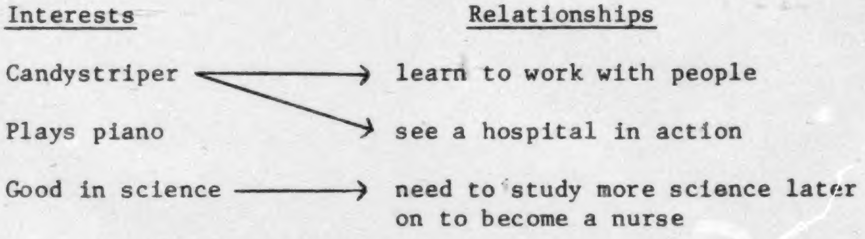
Are there any other things which you do well that you haven't named? (Make sure this is an inclusive list. Then ask:) Now, let's see if these things relate to becoming a ______________________ and if they do, how?

Interests:	Relationships:

Score 0, if no relationships can be seen, no matter how many interests may be named.

Interests are to be related to the student's first choice occupation, and these relationships are written in the right hand column. A line is drawn from each activity to each valid relationship. More than one activity might relate in the same way to the career goal. The score is the total number of linking lines. (See example below.)

Example: (Career Goal--Nurse)



Interests

Relationships

Candystriper → learn to work with people

Candystriper → see a hospital in action

Plays piano

Good in science → need to study more science later on to become a nurse

Score +3, since three linking lines have been drawn.

Scores usually range from 0 to 6.

QUESTION 13

13. What are some of the things people can do to better their chances of ending up in an occupation that they will like?

_____ get preparatory experience

_____ get required training/education

_____ learn about themselves

_____ learn about occupations

_____ ask someone's opinion

_____ don't know

_____ other: ______________________________

_____ other: ______________________________

Score highest level response. (Do not total responses.)

Score	Response
0	"Don't know."
+1	"Ask someone's opinion" or "Other" (Probe further when student answers "Ask someone's opinion.") Especially for 9th graders give +1 for "Keeping an open mind."
+2	For any one or more of the first four answers.

No score will be higher than +2.

QUESTION 14

14. Have you done anything to increase your chances of ending up in an occupation you will like? Yes ___ No ___ If yes, what?

_____ get previous experience

_____ get required training/education

_____ learn about myself

_____ learn about occupations

_____ ask someone's opinion

_____ don't know

_____ other: _______________________

_____ other: _______________________

Scoring is exactly the same as for Question 13.

QUESTION 15

15. What are some of the characteristics of a good career decision-maker?

	Self-rating		
Characteristics	Above Av.	Av.	Below Av.
______________________________	___	___	___
______________________________	___	___	___
______________________________	___	___	___
______________________________	___	___	___

Compared to other students your age, rate yourself on each of these characteristics: (Above Average, Average, Below Average.)

This question is given two scores: 15a for the characteristics named; 15b for the student's rating of himself on each characteristic.

15a:

Score	Response
0	"Don't know" or inadequate answers, such as "Know what they want to do" (A good decision-maker might postpone a decision pending further information.) "Intelligence" (High intelligence is not necessary for good decision-making. It is sufficient to recognize one's own ability level.)

+1	For each answer which suggests any of the following: Information Seeking ("Talk to people about what's needed.") Planning ("Setting goals," "Getting education.") Keeping an Open Mind ("Be well-rounded.") Self-Awareness ("Knowing self, interests, and abilities.") Personality Traits ("Self-confidence, determination, independence, industriousness.")

Give credit for an idea only once, even though it may be stated twice or more. Total score = total number of ideas mentioned.

Scores are usually no higher than 4.

15b:

Score	Response
+1	Below Average
+2	Average
+3	Above Average

The ratings for all characteristics are averaged to one decimal point (For example 2.5)

The highest score would be 3.0.

QUESTION 16

16. Throughout this interview we have talked about you, your career choice, and the important things that you expect from the work you enter. Thinking back over all you've said, answer the question, "What would an ideal occupation be like?" It doesn't have to be a real occupation, but it should include all the satisfactions, all the things you would want from an occupation, if you could have everything you wanted.

I. Intrinsic

_____ Prestige
_____ Independence
_____ Help
_____ Variety
_____ Leadership
_____ Interest Field

II. Extrinsic

_____ Income
_____ Leisure
_____ Fringe
_____ Outlook
_____ Advance
_____ Security

III. Concomitant

_____ Surroundings
_____ Conditions
_____ Activities
_____ Location

IV. Requirements

_____ Early Entry
_____ Ability
_____ Occ. Training
_____ Coll. Courses
_____ Pers. Qualifications
_____ Other Requirements
_____ Sex/Minority

V. Other: __________
____
____
____

This question is scored in exactly the same way as Question 2.

Scores usually range from 1 to 10.

A FINAL NOTE

The score for each question is entered on a score sheet. Scores are not summed across all questions.

WRITTEN QUESTIONNAIRE

Mark "No Data" if answer seems to be hasty, omitted, or given without thought.

Part A: (See copy at end of this report.)

The answers for question 1-21 concern information about specific careers. These answers should be checked with the information on the career as given in SIGI occupational writeups.

Question 1. Give +1 for each correct answer. Highest score will be +2.

2. Give +1 if answer is correct overall.

3. Give +1 for correct answer.

4. Give +1 for each correct course listed. Highest score would be +3.

5. Give +1 for each correct ability. Highest possible score would be +2.

6-15. Give +1 for each question where appropriate response has been checked.

16. Give +1 for each correct part. Highest score would be +4.

17. Give +1 for correct answer.

18. Give +1 for each correct part. Highest score would be +3.

19-21. Give +1 for each question if answered correctly.

Total all points given for questions 1 through 21 and enter on coding sheet. Highest possible total would be 29. Range was from 8-28.

22. Give +1 for each construct mentioned. Highest score would be 3.

Part B: (See copy at end of this report.)

1-6. Do not score.

7. Give +5 for Very high
+4 for Good
+3 for Average
+2 for Below average
+1 for Very low
0 for No answer

8-11. Give 0 for Never
+1 for Sometimes
+2 for Often

Add total points from 8-11 for score sheet. Highest possible score would be 8.

12-14. Give 0 for Agree
+1 for Disagree

15. Give +1 for Agree or Strongly Agree
0 for Disagree

16. Give 0 for Agree
+1 for Disagree

Add together total points from 12 - 16 for score sheet. Highest score would be 5.

17. Give 0 for Agree
+1 for Disagree

18-21. Give numerical figure to one decimal point for place student checked on scale (0-4.0).

REVIEW OF SCORING SCALES

There are six scales for scoring, corresponding to the six criteria being measured. They are:

I_1 Constructs: Questions 1, 2, 3, 8, 9, and 16 (plus 22 in Part A of the written section)

I_2 Information: Questions 5b and 11 (plus 1-21 in Part A)

I_3 Reality: Questions 6 and 12

I_4 Planning: Questions 7, 10, 13, and 14 (plus 17 and 8-11 in Part B of the written section)

I_5 Control: (Questions 12-16 in Part B of the written section.)

I_6 Awareness Questions 5a, 15a, and 15b (plus 7 and 18-21 on Part B of the written section)

Table G

Interview Score Means and Standard Deviations

	Grade 9		Grade 12	
	X	S.D.	X	S.D.
** Constructs	13.4	5.2	17.3	4.8
** Information	18.6	5.5	21.2	5.9
Reality	4.9	2.4	5.5	2.8
** Planning	8.9	3.5	11.5	2.5
Control	3.1	1.0	3.5	.9
Awareness	17.4	3.8	18.0	5.4

** $p < .01$

Means and standard deviations for ninth and twelfth grade samples on the six interview measures are presented in Table G. Though the interview has been revised since last Spring's field testing, these findings parallel those found earlier. As before, the mean scores for twelfth graders are higher on all measures with the difference between the groups reaching significance for Constructs, Information and Planning.

Table 4

Intercorrelations Among Interview Measures

(Grades 9 & 12 Combined)

	Con.	Infor.	Real.	Plan.	Cont.	Awar.
Constructs	1					
Information	.35	1				
Reality	.23	.19	1			
Planning	.39	.53	.36	1		
Control	.18	.29	.17	.32	1	
Awareness	.41	.65	.51	.63	.23	1

In general, the pattern of intercorrelation among the interview measures (see Table 4) is also similar to that obtained last Spring. The Awareness scale has a moderate to high correlation with the other scales; a low to moderate relationship exists among the Information, Reality and Control scales. The relationship between Planning and Information provides the major exception to last Spring's findings. Four of the items that were previously included in the Information scale are currently included in the Planning scale (items 12-16, Part B). This change in scoring, plus the addition of two new items to the Planning scale probably account for the increased relationship between the scales (from .33 to .53).